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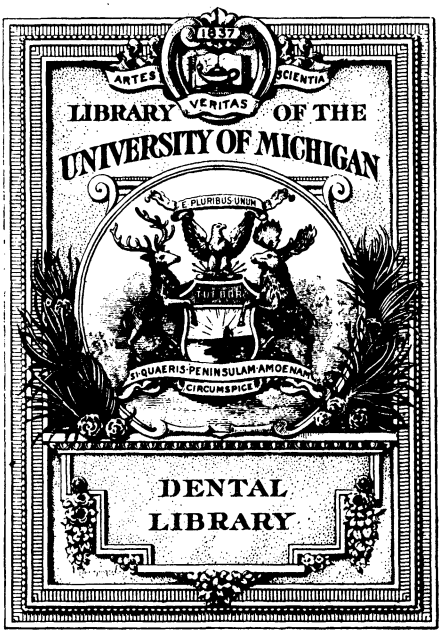
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AMERICAN DENTAL JOURNAL

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OUR POST GRADUATE COURSE

PORCELAIN.

T. ELHANAN POWELL, D. D. S.

There are many instances in office practice where porcelain may be used to advantage aside from the baking of inlays, and after one has learned to handle it in making inlays he will gradually find it necessary as well as desirable to replace in many instances the facings by making up special cases himself.

Often the lateral incisors show a marked tendency to revert to the original type, which is cone-shaped, hence the many cases presented where an otherwise symmetrically shaped denture is unsightly on account of the peg-shaped laterals.

At one time we were in the habit of leaving this condition as presented, or else we chose the one alternate, that was, to cut off the tooth and put on a crown; either way seemed a pity. By thus cutting off and crowning the tooth the appearance was decidedly improved, provided that the gold showed at neither the gum line nor the cutting edge; but, unhappily, the operator could not always be sure of good results and frequently trouble followed devitalization and the patient's second estate was worse than the first.

The dentist can now make a porcelain jacket crown, leaving the tooth pulp intact, creating a perfectly and naturally contoured tooth, with a minimum amount of pain and inconvenience to the patient.

This may be done in one of two different ways: One is to grind the tooth toward the gingival line encircling the tooth so as to make a decided shoulder at and slightly underneath the free margin of gum.

This shoulder must be of sufficient width to allow considerable thicknesses of porcelain at this point.

You may grind at this point with impunity, guarding against the exposure of the pulp. The grinding may be done with knife point disks, and with carborundum stone run wet to avoid inflicting pain from heated instruments.

The general outline of the tooth should be much the same shape as the original except that it should not show such a decided tapering, and this because more grinding will have to be done the gum line

to enable the making of the porcelain of sufficient thickness for strength.

But there should be a gradual tapering toward the cutting edge so that the foil can be drawn after burnishing.

When the preparation of the crown has been finished as above, it should be nicely polished with disks and strips before attempting to burnish a matrix, so that the matrix may be easily removed.

Now, take one thousand fine platinum and cut off a piece large enough to encircle the tooth twice and somewhat longer than the necessary length of the crown.

At this point take a Jiffy cement tube, cut it off so that it approximates the shape and size of the tooth and then wrap the platinum around this, thus securing almost the desired shape before attempting to burnish on the tooth.

This shell should now be placed on root, cutting off the excess of platinum so that there is only a slight lap at the point of contact.

With a large piece of vulcanite rubber held tightly to the under or lingual portion of the tooth, burnish the platinum at labially and proximately with wet pledgets of cotton or piece of rubber until the platinum is wrapped tightly around the tooth.

Then, to finish the burnishing, pass a piece of narrow tape around the platinum at the gum line, and wrap the tape tightly toward the cutting edge. When the thimble thus formed approximates the tooth the joint should then be soldered together with pure gold or platinum solder.

By this means a matrix is obtained over which we may carve and bake a porcelain tooth to any shape that may be desired.

This can be accomplished by holding the matrix with the pliers at the bucco-gingival, building up the lingual, biscuiting this and then holding the lingual with the pliers, building up corners and then biscuiting the labial portion. When the foundation body is thus baked on, one should then choose the enamel shades, building and baking these in the same way in which the body was baked. This building on of the porcelain may be done with the patient in the chair, but a better way is to take an impression with the platinum thimble *in situ* and make a plaster of paris model so that the work can be done leisurely in the laboratory. This will be more satisfactory to both operator and patient.

When the final glaze has been put on, the case should then be placed in water a few minutes so that the platinum may be more readily removed. The jacket when finished should pass easily onto the tooth, fitting snugly under the free margin of gum, effectually protecting all that remains of the tooth from the fluids of the mouth.

If this is found to be the case, the jacket should be cemented into place. The cement should be of about the same consistency as that used in setting inlays.

Another method is to use a facing for the labial portion, grinding the lingual part of the facing so that it will drop down onto the peg-shaped tooth in line with the teeth on either side. If the case will permit, the pins are left in the facing so the porcelain on the lingual part will be baked to these pins, supposedly adding strength to the case.

Of course, this makes a nicer case, as few men are able to build up a contour and carve a tooth so that it will have that perfect outline and an effect as artistic as the molded facing. However, when I use a facing, I much prefer a steel detachable facing which has no pins. This can be ground away lingually as much as desired and when finished is quite as strong as need be for this kind of case.

When making these crowns the toughest and strongest bodies obtainable should be used and personally I think enamel may be used only on the labial, building up the entire lingual surface with Close's or some other strong body.

There is not as great a tendency to breakage in these jacket crowns as one might anticipate because of their perfect fit to the tooth and the support rendered by the cement. At any rate, it is a decided improvement over devitalizing, banding and putting a pin in root, or leaving the abnormal conditions as at first presented.

(To be continued.)

OPERATIVE DENTISTRY.

BY DR. R. B. TULLER, D. D. S.

CLINICAL PROFESSOR OF OPERATIVE DENTISTRY, CHICAGO COLLEGE OF DENTAL SURGERY.

DISCUSSING GOLD FILLINGS.

The "secret" of checking decay in a tooth and preventing recurrence, after removing the debris and infected tissue and sterilization against leaving germs behind, is to seal the cavity against the invasion of germ-laden moisture, and keep it thus sealed indefinitely.

Hermetically sealing the cavity might be termed an aphorism as old as dentistry; and yet how often it needs to be repeated and emphasized, with what good it is not easy to say when the average of gold fillings as to value or durability has been placed, by good authority, at about three years. This is based upon the average taken together of the work of all grades of gold operators, good, bad and indifferent.

To leave out the experts at one end, whose average may be fifteen or twenty years, and the utterly incompetent who presume to attempt gold fillings, and take the average of average practitioners of some experience, it would not rise above six years.

We, personally, may have a conceit that *our* gold fillings, with rare exceptions anyway, are not of the failing kind; it is the "other fellow"; but the "other fellow" may know that we are more often failures than we think, as well as we know that his are too often rank failures; for we are constantly running across them that, while they still remain in, are not doing service in the way of preservation. We have sometimes been surprised and get a jolt when we have now and then come across the failing fillings of well-known men whom we recognize as not only good, painstaking, conscientious operators, but really experts in the manipulation of gold to fill and *preserve* teeth.

There are men who can and do make as perfect gold fillings as can be made under like conditions; fillings that have stood the test of time twenty, twenty-five and thirty years without signs of failure. We know, many of us of long years of experience, that some of our own fillings have stood that test; but we all have done

work that we have never seen again and don't know how it has turned out.

Any operator of much experience must admit that the average gold filling, from the viewpoint of a preserver, is really a failure. A filling that has unquestionably failed in six years, in most cases began to fail—slowly to be sure—as soon as the rubber dam was removed; for the reason that moisture found a crevice, however minute, where it could work its way in between gold and tooth. In such cases destructive work begins at once, though certain conditions that obtain may retard it.

Gold, while one of the oldest and best known materials for filling teeth, is one of the most exacting to manipulate and make it seal the cavity; and especially the usual cohesive gold foil pellets. To seal a cavity the substance used must be so closely and tightly adapted to the cavity walls that it is truly hermetically closed so that no moisture can penetrate between the two. If gold, by the very expert operator, is made to adapt itself perfectly to the tooth walls, save one little unobserved leak, his beautiful work of art does not count for much; and here is where earnest, painstaking talent loses out as to the real worth. The operator is unconscious of the defect—was when it was done, else he would have had it corrected. It may be well said of a filling of any kind, as of a chain, that it is no better or stronger than its weakest part. The operator who does not have some weak spot in many of his gold fillings is indeed a very superior workman. With his most exacting care, it is so easy to unknowingly slight some point. We have to be painstaking with any filling material, no matter what, but more with gold than anything else; and we well know that unless an operator in gold first comprehends the peculiarities of the substance and the requirements, and is then capable and skillful, and lastly unrelaxing in care at every step in applying his knowledge and skill, cohesive gold is likely to be piled up on itself at some point without close adaptation to the cavity walls at that point.

Unfortunately an incompetent operator can anchor cohesive gold in a tooth and build up a filling that will stick for considerable time, and present when first made a very showy appearance, but which as a tooth preserver is a delusion and a snare, since the patient is incompetent to judge of its merits, and as long as it stays is beguiled in the belief that his tooth has been safely cared for.

Now, if gold is susceptible to many or frequent faults in the hands of competents and experts, or requires the utmost painstaking skill and effort to prevent them, what is to be expected of those who lack comprehension, and who lack mechanical and artistic skill, or who are not patient and painstaking in earnest endeavor to have every step right? Some men with every good attribute, save fine mechanical manipulative ability help to make a very poor average. They are good men in the wrong place, or with the wrong substance to work with.

Some operators accomplish fine gold fillings in steps and ways quite different in technic from others, which demonstrates that there is in many cases more than one way to do things; but in the problem of adapting cohesive gold to cavity walls, Dr. Black strikes the key-note when he says that a filling of cohesive gold should be so constructed that the pieces going next to the wall may be wedged in between the wall and the gold already in position. That is to say, that after the foundation is laid the central portion of the filling should be built up in advance of the rest, leaving it somewhat v-shaped at the junction of gold and tooth. Into this v-shaped space should be wedged with suitable pluggers the necessary gold to bring all up to level, when the central portion should again be advanced and so on to the end. Some operators, and wisely I think, wedge in to this space and particularly against the walls small rolls of non-cohesive gold in such a way that that soft, adaptable material is, at all points, in contact with the tooth substance, except just at the very margin, where, ordinarily, the cohesive gold may be easily and correctly adapted.

In my personal experience some grades of crystal gold answer admirably for this place next the wall. It must be of a very soft velvet quality and not crumbly; and must of course be carefully condensed. The plugger used should be wedge shaped, or a thin foot point.

Dr. Black says it is well nigh impossible to correctly adapt cohesive gold to a wall by direct pressure against the wall; or words to that effect. That is quite true of pellets of cohesive foil gold; but if any quality of gold can be packed and adapted to the walls by direct pressure, it is the soft, velvety crystal gold. Have used Watt's with a great deal of satisfaction.

It is a rather strange thing, if I am correctly informed, that none of the dental colleges give any practical instructions in the use of non-cohesive, and crystal gold. Cohesive gold foil is the one and only, or at least the most universally used gold in all colleges; and yet the average of time value of these fillings is put as low as three years in general practice.

In the light of doing the service for humanity that we as a profession proclaim our fitness for, the average gold filling belies us. There are some operators that can and do make gold fillings every day, as said before, as good as the possibilities of the substance will permit; and yet in this day, the zenith of dentistry—in this day of the highest professional enlightenment and technical training, our average falls a long, long way below what it should. Gold is a metal of so many and diverse qualities—of so many rare good qualities that almost anything can be done with it; yet in the light of results, is it the best, the leading material to fill teeth in the hands of the average practitioner?

In the light of expense and of the long, tedious time necessary to pack gold as it should be; in the light of esthetics; in the light of the strenuous manipulative difficulties above referred to; in the light of more modern ways and means of taking care of the teeth, with more certainty of preservation, the cohesive gold foil fillings, should be confined to a certain range of cavities where uncertainty of adaptation has no place. The expert of course would feel no uncertainty, where the average practitioner would or ought to feel it, and resort to things he can be more sure of. He may resort to inlays; to gold inlays, perhaps, in some places. But such a class of work also requires ability, artistic taste and a high order of skill; but when it comes to setting, there is little question of sealing the cavity. It may come out through lack of attention to certain principles, but while it stays it prevents and preserves. Many a gold filling stays a long time in the tooth when it would be better if it came out and apprised the wearer that it was a failure, and that the tooth had not been preserved and was in need of prompt attention.

If operators who are led to attempt gold when they realize that, to them, it is a most difficult substance, and doubt (secretly at least) their own ability to properly fit it to cavity walls, would line the cavity with cement in advance of putting in the gold, or even a quick-drying varnish prepared for such work, such cavity would be

better sealed, and would do more to preserve the average filling than without.

An operator questioning his own ability (in secret) as to manipulating gold, might better, and in many cases very properly resort to a good non-shrinking amalgam; and yet there is considerable skill required in adapting amalgam and getting, first surely to the walls, and then a proper contour and finish; but a good, non-shrinking amalgam will save more teeth with average practitioners than gold.

Tin is more easily adapted to cavity walls than gold and may be more rapidly worked; but there are not many operators today using tin, and of course neither amalgam nor tin would do for front fillings.

Cements, except some of the late silicate cements, are classed among the temporary or makeshift fillings. Some of the enamel (silicate) cements have given evidence and proof of some permanency and probably far above the *average* gold fillings. They can be extensively used in anterior teeth.

Sticking to the gold, if one so leans, the plan referred to of keeping the central portion highest and wedging *small* pellets of non-cohesive gold next to the wall; or using soft crystal gold (which, of course, is cohesive) and only hand pressure until it is as thoroughly condensed as it may be by hand, permits of a few finishing blows of the mallet. The non-cohesive pellets referred to above should be hand-pressed and then malleted to keep the filling all through of the right density. Non-cohesive gold used for this purpose should not be allowed to spread out over the main part of the filling, but kept jammed close to the wall, so as not to interfere with the cohesion and strength of the cohesive part. I have, in some cases, used small folds of tin, or fibre tin, to wedge in next to the wall, discontinuing it before it came to a margin where it would be undesirably exposed.

This non-cohesive gold or tin in small pellets or folds may be safely used in many cases without in any way sacrificing the strength of the filling, if the condensation is made as it should be, and kept to the narrowest confines next to the wall. It is simply, as it were, a thin lining put in as the filling is built up.

BACTERIOLOGY AND PATHOLOGY.

BY GEO. W. COOK, B. S., D. D. S., CHICAGO, ILL.
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In the laboratory technique of bacteriology as previously outlined is a brief synopsis of some of the routine necessary in the study of this very interesting and most important branch of pathological change. During the last quarter century the subject of bacteriology has become one of the most important subjects of pathological change, and in order to understand the true meaning of infection, contagion and immunity, we are forced to study certain biological phenomena that are constantly manifesting themselves in the causation of disease processes, as studied in both the animal and vegetable kingdom.

Without the necessary bacteriological technique and the ability to go into the laboratory and study these phenomena one is practically incapable of becoming familiar with any of the diseased processes known to man; for it is a well known fact that one of the fundamental principles of disease processes is to understand the phenomena of life in its physiological state, and what deviation from this state can be produced from the higher forms of animal life by these low forms of both the animal and vegetable unicellular organic structure.

In order that one may study physiology it is extremely necessary that he understand something of cell physiology, and there is no better place to study such processes as in the bacteriological laboratory. For more than a quarter of a century the science of bacteriology has become one of the most important branches of the tree of general scientific knowledge. The term "pure culture," as used in the present sense, is one of the phases for the struggle of existence and belongs to the common scientific literature of the present age, as well as to the science of disease.

In the outlines as previously laid down we called attention to the various steps that are necessary in order that we may carry on the laboratory examination of bacteria. It will at once be understood that there is a vast variation from this step by step routine as laid down. In fact, we know of no particular routine that must not be varied with experience and knowledge of any subject that comes within the range pertaining to biological and pathological sciences. An indi-

vidual is quite unable, until familiar with the laboratory technique, to interpret what he may see under a microscope both in the way of unicellular forms of life as well as the multicellular forms of life. We are constantly reminded of how little men know of these subjects who write very familiarly upon these important phases of the phenomena of disease and who have not had a sufficient amount of routine technique in order that they may know the possibilities of variation of changes in tissue cells, as well as the cells of these small organic structures that are capable of existing as unicellular forms of life.

The animal body is made up of a large number of cells known as tissue cells and microscopically they differ very much from each other. In the first proliferation of the multicellular forms of life, we are familiar with the existence of only a few typical cells, which in the course of development of the animal body begin on certain plains to develop certain cells that differ from some of the preëxisting cells into other forms that differ in both their microscopic appearance as well as in their functional activity. As this developmental process goes on we find that there is a physical as well as a chemical change brought about by certain cellular activities. We are also reminded of the changes in the microscopic appearance of many of these tissue cells. It is somewhat of a difficult matter to determine the cellular changes that take place in tissue when it starts to change from a physiological to a pathological tissue structure. It is oftttimes difficult to determine a diseased cell from a true normal cell. A cell may be from a microscopic appearance a normal tissue cell and at once change in its functional activity to an abnormal one. The best illustration of this is found perhaps in certain mucous cells, when in microscopic appearance an expert is incapable of seeing the physical change in the cellular structure, while in the case of perhaps a normal appearance the cell may be excreting an abnormal mucus. It is possible for such changes to vary in the chemical change without there being a very great physical change of the tissue cell. This is so manifestly true that now we are constantly looking to the fluids of the body for proper interpretation of what chemical processes are going on in certain tissues in order that we may be able to interpret certain phenomena that we observe in the general makeup of the individual.

In the study of these chemical and physical changes of the tissues of the body, we are constantly reminded of the interdepend-

ence of one set of tissue cells to that of another. As in the case of the chemical change of the mucous cells, without there being any physical changes apparent in the tissue cells we begin to reckon with the functional activity of other tissue cells to determine if possible wherein the seat of the trouble lies. This I may say is not always easy. The same may be said to be true with reference to certain forms of bacteria. This same variation is best illustrated in the case of the diphtheria pathogenic germ. We have in this bacterial form of life an organism that is capable of producing disease by the substance it secretes.

We may find a large number of these organisms in direct contact with the oral mucous membrane without producing any of the phenomena of the disease. We designate those organisms that do not produce disease as a pseudo form of pathogenic bacteria. Now the physical appearance of the two organisms is not easily differentiated, but there is a chemical difference in their cellular activity; the one that is capable of producing disease is capable of secreting within its own cellular structure a toxin that it will turn loose or let loose in the tissues, that brings about a toxic condition of the tissue cells and they die. We have there formed a membranous-like substance which is composed of dead mucous cells and yet holding their contact with each other so as to remain intact for a considerable time. This we call coagulated necrosis, while in the case of the non-producing organisms they apparently have no power of producing these toxins and consequently are unable to produce this coagulated necrotic condition of the soft tissues. However, it will be borne in mind that possibly there is some change in the tissues and in the cellular structure of that particular locality of the mucous membrane, and in this way the disease-producing power of the bacteria may be reduced to such a point that the toxins cannot be formed. In such cases we have perhaps a manifestation of the cell proliferation of the mucous membrane that has the power of reducing the action of these bacteria even in their highest state of disease-producing power.

So it will be seen that in dealing with these problems we must almost get into the realm of the unknowable, for with the best microscopic aid and chemical analysis we are unable to permanently determine under what circumstances disease may be produced. What is true of tissue cells and bacteria, under the circumstances above

mentioned, of how disease is produced and arrested, is more than we at the present time can settle with any degree of definiteness.

The study of bacteriology, according to the outlines laid down, only familiarize one with certain well and typically formed bacteria, but the great problem that confronts the bacteriologists is to interpret certain phenomena that are constantly manifesting themselves in the growth and development of bacteriology as at the present time looked upon. The words "pure culture" as used in the common sense of theoretical and practical medical bacteriology cannot under ordinary circumstances reveal but a few facts with reference to certain phenomena of disease, that we almost daily have under observation in the general practice of medicine. Of course we understand, as we previously stated, that the disease-producing power of bacteria cannot always be brought out with artificial culture with the ordinary technical laboratory means. The mere presence of bacteria always indicates something, especially when they are in contact and practically living off either the waste products of the tissue cells or the substance that might produce the nutritive substance of the tissue cells. In this way they may produce the physical or chemical property of tissue cells from a normal to an abnormal state, and then produce what we are sometimes pleased to call a diseased tissue.

It has been repeatedly shown that these bacteria may be quite essential in the caring for and breaking up of the waste product that is eliminated from the tissue cells. We know by experiment and observation that the tendencies of all living substance is to take into its cellular structure certain organic elements and changing these compounds in such a way as to extract a certain amount of nutrition from them and then extrude from their cellular substance certain compounds that we call waste products. Now these waste products must be broken up and again reduced to their simpler elements. It sometimes happens that these bacteria are the most important agents in taking care of these waste products and the probabilities are that one of their biological relationships with all other living substance is this reducing process. We are all more or less familiar with the reduction processes that take place when certain forms of bacteria come in contact with certain carbohydrates. The first thing they do in their life process is to chemically build up their own body substance. The second is that of leaving certain compounds unmolested in the molecular disintegration of organic substance; as, for instance,

in the chemical change of carbohydrates we have hydration and formation of anhydrides. We start out with starch and water; the result is that we first have maltose formed, dextrin, cane or grape sugar, or sometimes in this chemical change we can start with grape sugar and water and form starch. This is sometimes called the reversible action of bacteria. When we have one particular agent it may be changed to another chemical compound in the same series, but if the reduction process goes on from start to finish we will have some of the most important chemical compounds formed through the reduction process. It is in this way we are liable to have formed agents that are very detrimental in the production of certain disease processes. On the other hand, if we have the reduction process carried on in proteid substance or albuminous compounds, we have formed certain ptomains; and we are more or less familiar with the fact that ptomains are agents that have been known to be capable of producing the most interesting and complex symptomatic conditions of disease process. It is through the bacteriological study of such processes in the laboratory that we have revealed some interesting facts with reference to the true function of bacterial forms of life. The technical bacteriology as applied to our laboratory work has revealed several phenomena that are extremely important to the human race, as well as to the sciences that go to make a foundation for the superstructure of more scientific problems to be worked out.

It was not until that great genius, Pasteur, made the remarkable observations that certain forms of these organisms could live without the free oxygen of the air that we could realize that such an existence was possible for any living thing. A theory that has been held for centuries and centuries that all living substance must have the free oxygen of the air was so well fixed in the minds of the human race that it seemed practically impossible that such an observation could ever be promulgated and brought to scientific belief in the period that it has since these observations. It was a well conceded fact that no living substance was capable of obtaining its oxygen from any other source than that of the air, but Pasteur showed that these organisms were capable of breaking up compounds and extracting oxygen from the substance which they acted upon absolutely in the absence of the oxygen of the air. This has revealed some very important facts with reference to the causation of disease in certain animal and plant life. The disease producing power of

these organisms lies in this interesting fact that they can live in living tissue in the absence of the free oxygen of the air, extract their oxygen from the tissue, and build up their own body substance, a toxin that is capable of bringing about certain symptomatic as well as pathological changes in local and general tissue structure.

(To be continued.)

PREPARING SENSITIVE CAVITIES.

A comparatively painless method of cutting away a large body of sensitive dentin is to have the stones or burs run in water. I am able to do so-called heroic cutting with the stones run in water, so that the water is almost a running stream uopn the bur or stone, and it can be run at a high rate of speed.—*E. J. Perry, Dental Review.*

BURNISHING A GOLD PLATE TO A TOOTH.

When burnishing a piece of gold to a lingual or other aspect of a tooth, a good practice is to place a piece of silk ribbon over the gold and carry the ribbon around the tooth so as to have both ends meet on the opposite side, and hold them firmly with the fingers, thereby holding the gold plate in place. Under this silk the gold may be burnished with very little trouble.—*E. M. S. Fernandez, Dental Review.*

INJECTION OF STAPHYLOCOCCUS VACCINE.

The writer's actual experience is limited to the following case: "In a patient, a girl of twenty, with pyorrhea alveolaris (Riggs' disease). From the pus welling up from the teeth I grew the staphylococcus albus. Her opsonic index to this I found normal. Two innoculations at intervals of two weeks, with two hundred and fifty of the capsule of a spore. It has been recently found that the solution of this drug becomes more potent when potassium iodid is combined with it, the latter agent increasing its solubility. The U. S. P. published in 1906 directs the addition of potassium iodid to all tinctures of this drug.—*Dr. H. C. Ferris, Cosmos.*

Our Foreign Department

DR. THOMAS L. LARSENEUR, Foreign Department Editor

CASTING PLATES BY USING PRESSURE.

Le Laboratoire, Paris, March 22, 1908.

The simple and ingenious method of Mr. Solbrig for casting gold inlays under pressure, and the simplicity of construction of his casting pliers, have been demonstrated in our May number giving the marvelous results obtained. Such success created new ideas to apply this method to the construction of more extensive work; it is from these researches that the machine below has been perfected.

It was a laborious task to apply theory into practice; but it is now possible to cast full or partial plates without teeth and in many cases with teeth. These castings may be made in gold, tin, silver, aluminum or with the alloy of any of these metals.

The method used for the construction of plates will be in proportion as rapid and easy as that of the inlays. In fact a wax model is to be made of the parts which are to be reproduced in gold; the wax is to be invested, the investment heated, wax burnt out and casting of the metal in the mold, following the same care as for gold inlays and bridges. In order to realize the saving of time, it is sufficient to bear in mind that no sand mold is required, no zinc die nor lead counterdie, no swaging and no doubler to solder.

This machine or press used for casting metallic plates is very simple (Figs. 1 and 2). The base is rectangular and has in two points of its larger axis two pillars which are perpendicular to the base. At the free extremity of one is articulated a movable lever working on their plan, that is up and down and to which the second pillar is used as resting point after the casting has been done.

Between the two pillars, in a datum position a cylinder is placed which will receive the flask and investment. A column attached to the frame supports the blow-pipe of which the flame may be directed on the cylinder. A cover attached to the lever by a bolt, when pressed down, fits the upper part of the cylinder.

To the cylinder, as in the Solbrig plier, corresponds a cone which will make a funnel shape depression in the investment where the metal is molten.

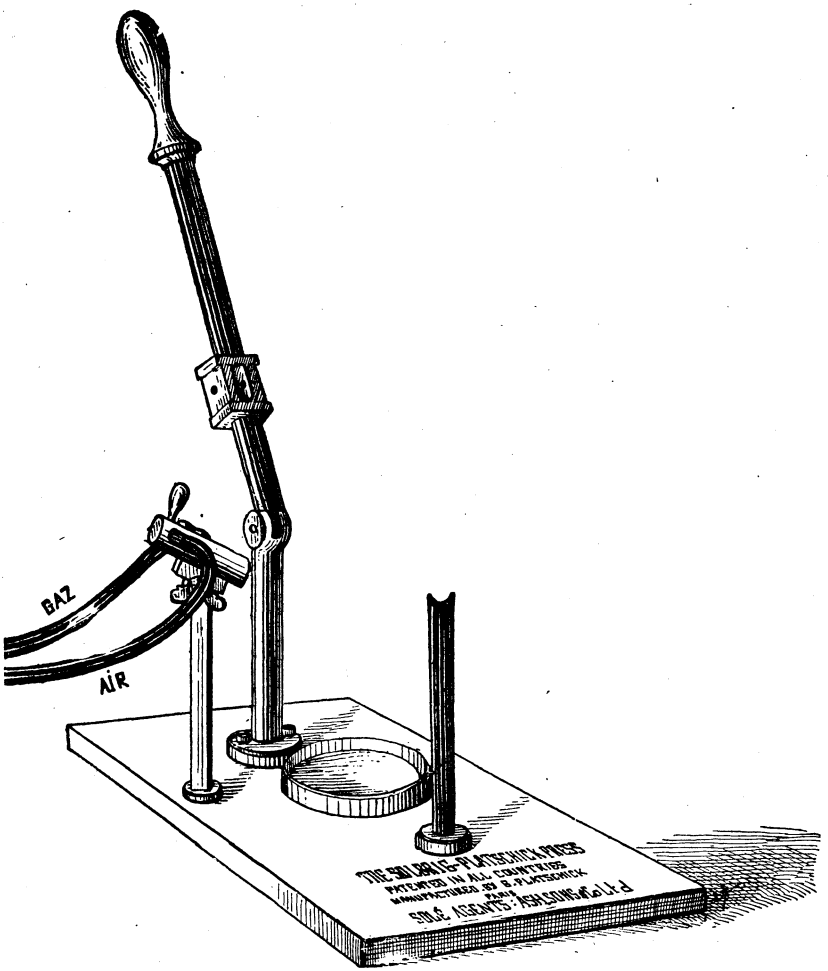


Fig. 1.

It is necessary to take into consideration the dimensions of the work to be cast, and to use the smallest cylinder that will contain it. By so doing it will save a considerable amount of investment, time and heating. On the other hand the model must be well protected

on all sides by the investment. In order to comply with this, different sizes of cylinders are required; this press has five different sizes, each of which has a corresponding cone. In order to compensate for the

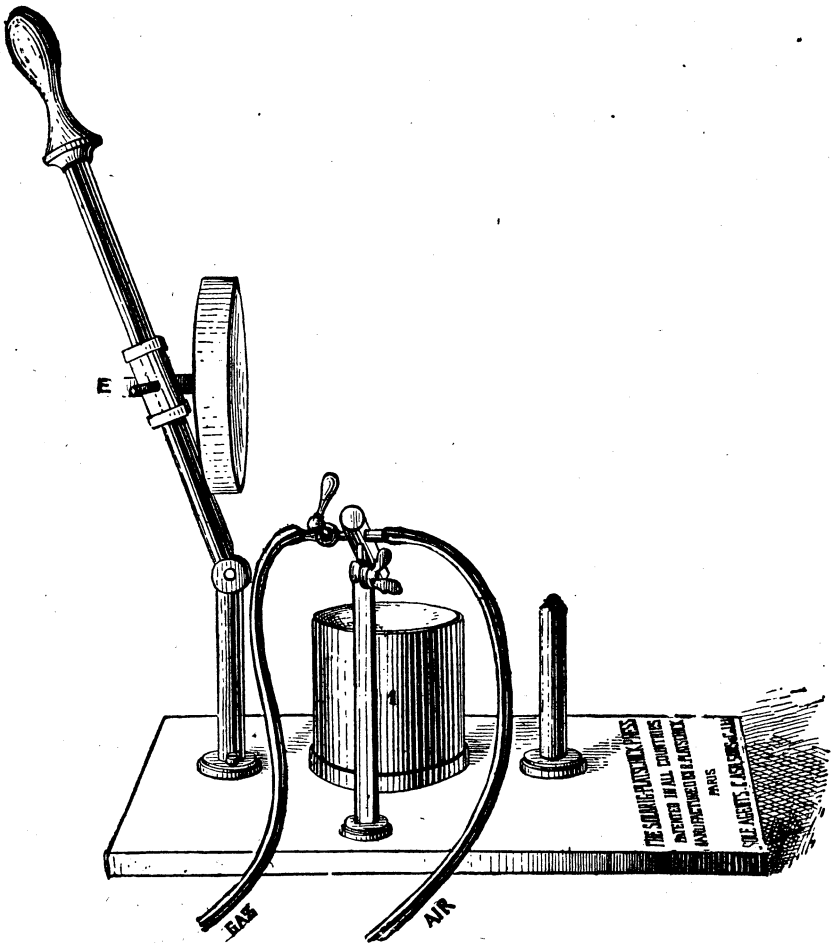


Fig. 2.

difference of height and diameter of these cylinders, using the same frame, a set of lids corresponding to the different cylinders is used. (Fig. 3.)

Figure 4 demonstrates the press ready to cast a plate with small

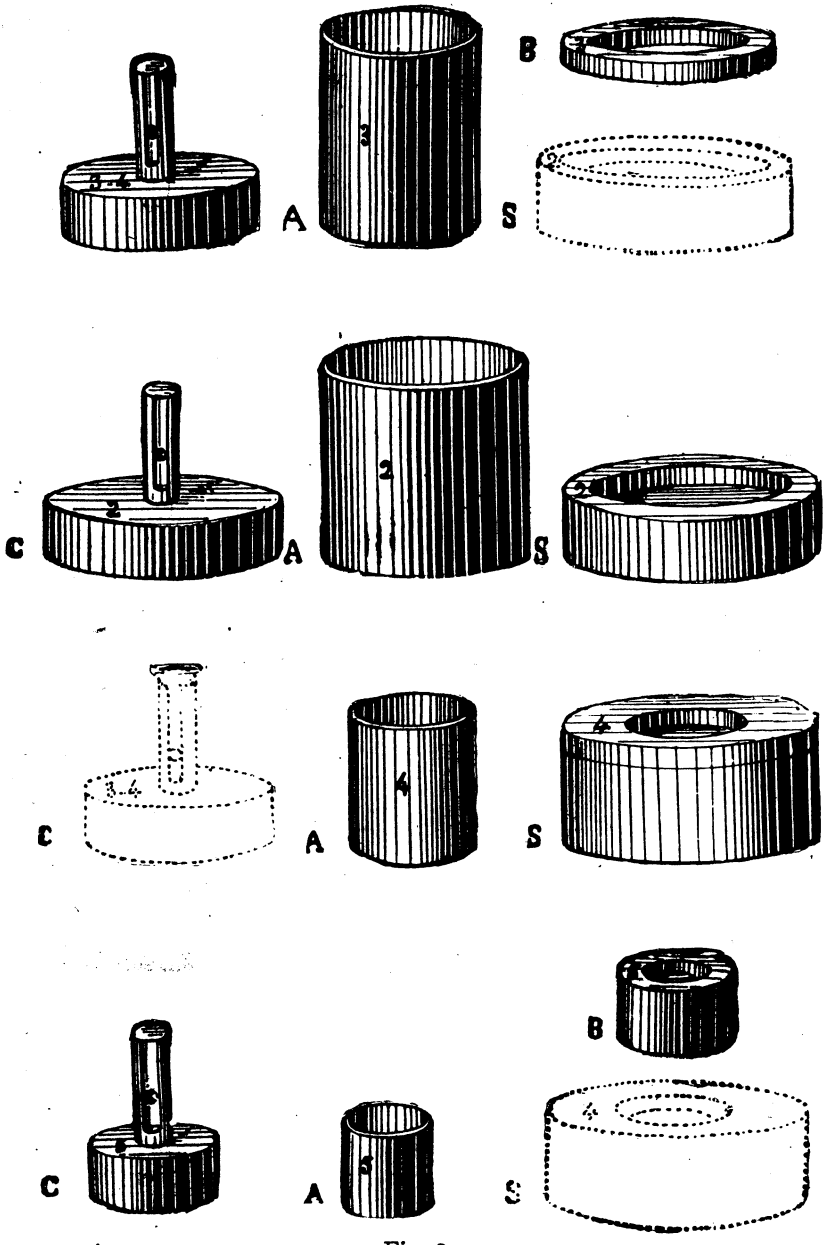


Fig. 3.

dimensions. A large size oven with a special burner is used to burn out the wax of the larger size cylinder. (Fig. 5.)

With these few implements, this press may be used from small

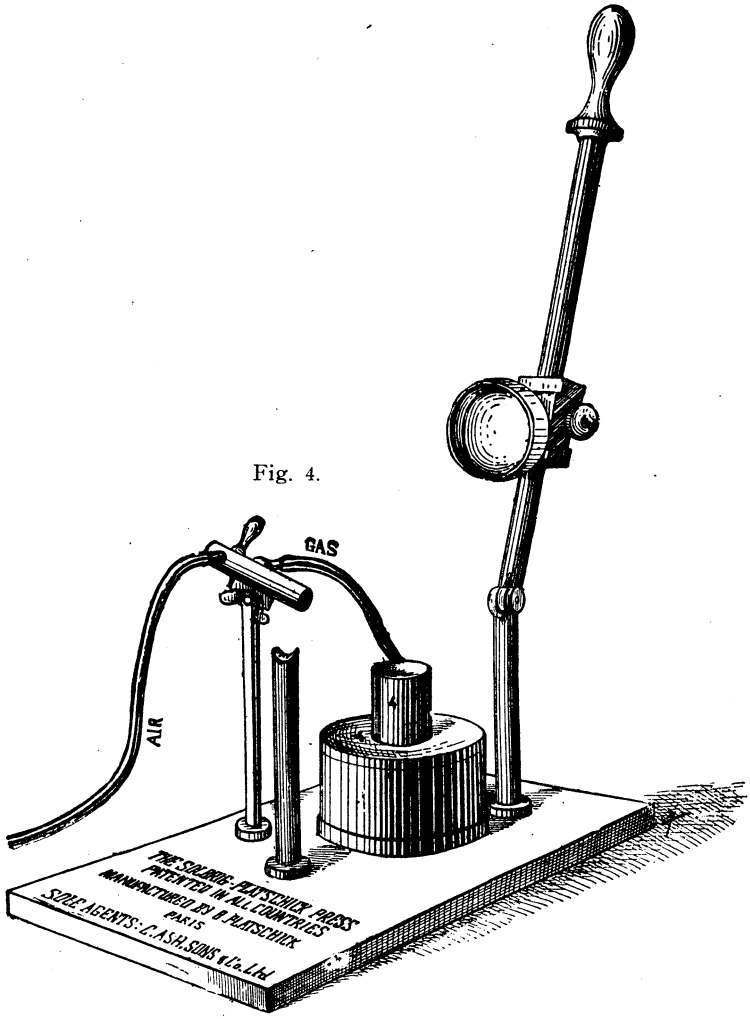


Fig. 4.

inlays to full metal plates. The modus operandi will differ slightly with the different cases. We will now expose to you the technique in the construction of a lower plate and a bridge in order to demonstrate the general principles which are always invariable.

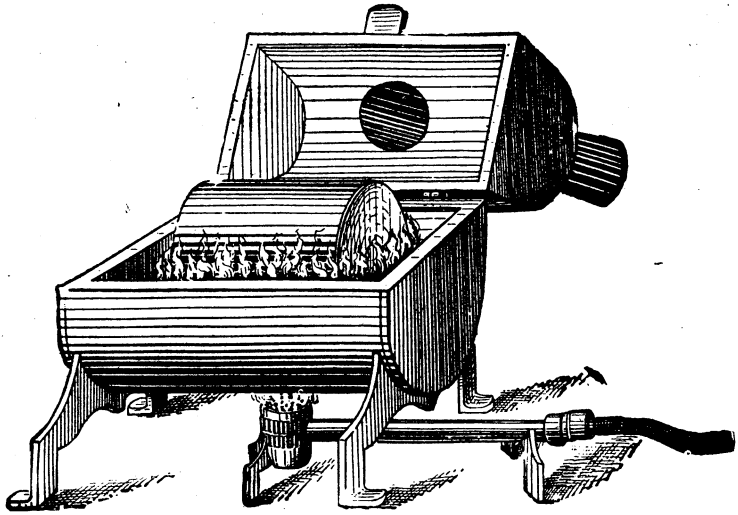


Fig. 5.

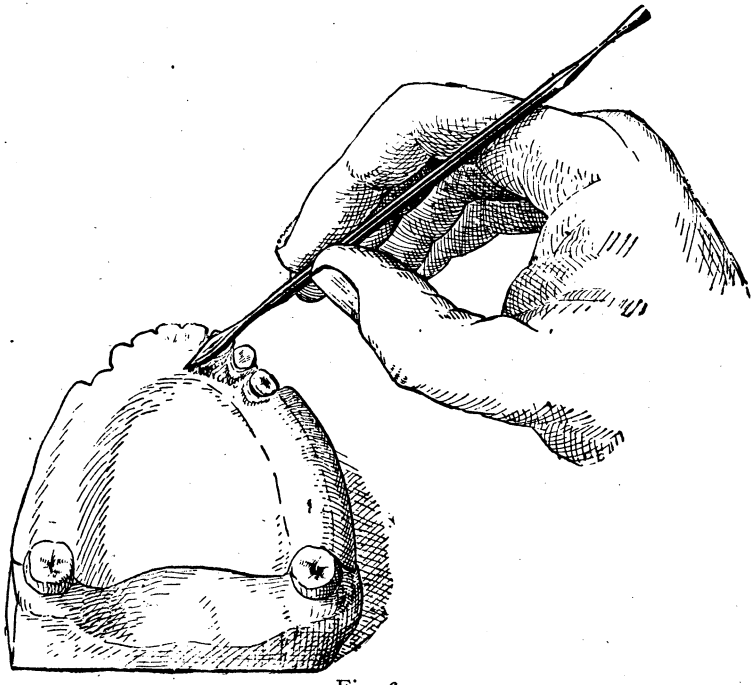


Fig. 6.

It is often urgent to construct a lower metallic base; this special kind of plate is the one which presents the most difficulty owing to its length and in most cases to its narrowness.

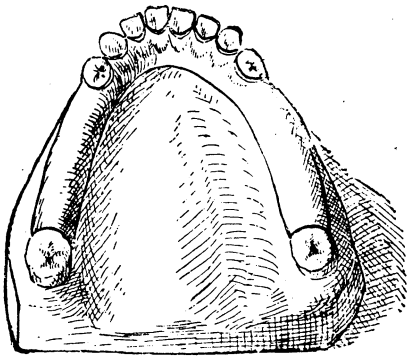


Fig. 7.

After having slightly and thoroughly oiled the plaster model, a sheet of wax is selected, having the desired thickness and it is softened by exposing at a distance to the flame of a Bunsen burner. It is then

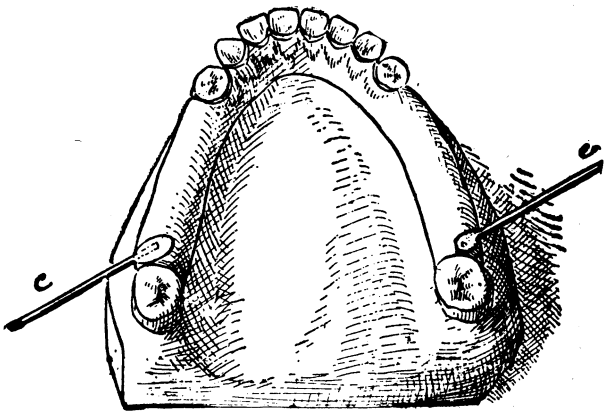


Fig. 8.

applied to the model the best possible way by using the fingers; then the wax is forced into the depressions and interstices of the model by using a burnisher which has been slightly coated with vaseline. (Fig. 6.)

A case like Fig. 6 would require the soldering of a reinforcement, which means soldering, etc. By this method of casting, one can proceed in a much more simple manner. In order to have the base

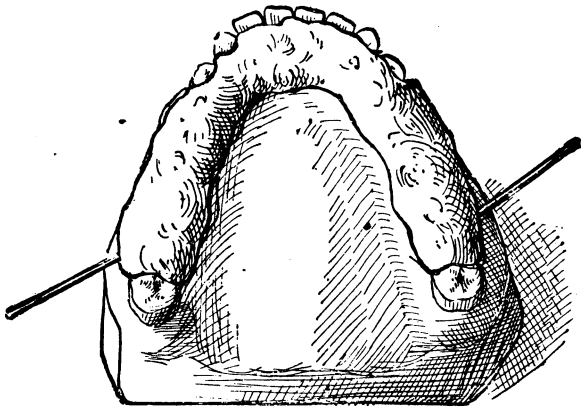


Fig. 9.

reinforced in a certain point, it is sufficient to add at that part of the wax another piece of sheet wax not quite as thick as the first one.

The wax is then traced to the exact size desired in metal and cut

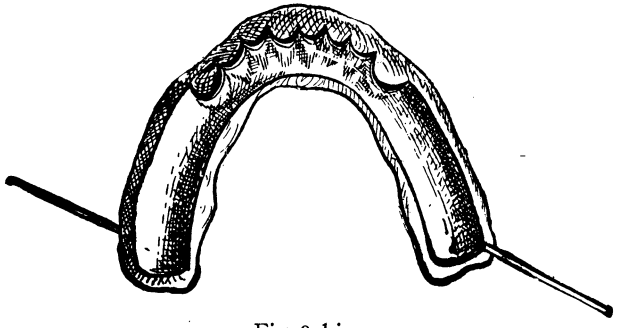


Fig. 9 bis.

following the tracing (Fig. 7). The wax plate is then removed from the plaster model and great care is taken to see that no particles of the wax have adhered to the model. This precaution is indispensable,

as the least hole in the wax would be reproduced in the gold plate. Now the wax is replaced in position on the model; a small piece of

Fig. 10.

wax is now secured to the wax plate at the point where the sprue is to be secured; the sprue is now heated and set in the wax and allowed

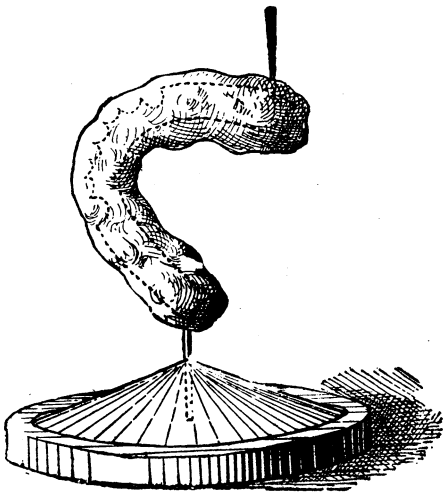


Fig. 11.

tc cool. It is desirable to give to the sprue a direction such as to allow the wax to set in the center of the cylinder when invested and

to have it as solid as possible when the sprue is placed vertically in the cone.

It is advisable to have a second sprue at the other extremity of the plate (Fig. 8). After investment, the removal of this sprue will leave a channel which will allow the gases to escape when the wax is being burnt out.

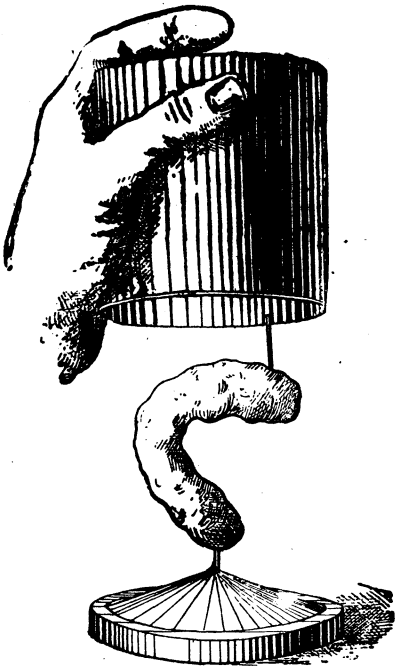


Fig. 12.

A small quantity of investment is prepared which is first applied with a camel hair brush to the thickness of about one-eighth of an inch on the whole lingual surface of the wax, which is still on the model (Fig. 9).

When the investment has become hard, it is removed with the wax from the model (Fig. 9bis) and wax and investment are placed in water. More investment is mixed and a coating is applied to the free surface of the wax and also more investment is added to the first investment. These two coatings of investment now make one mass, which has unit contact one with the other, due to the fact that the first

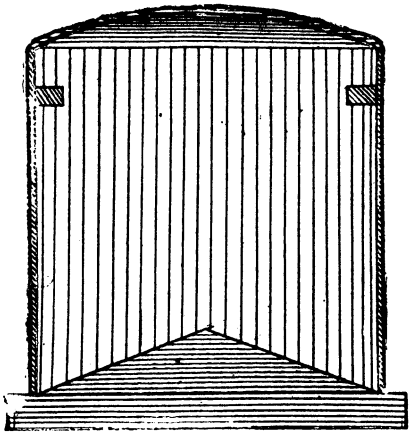


Fig. 12½.

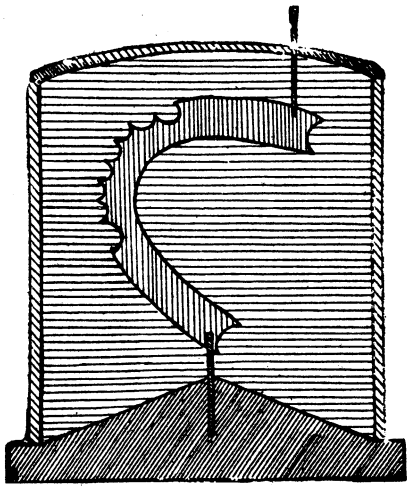
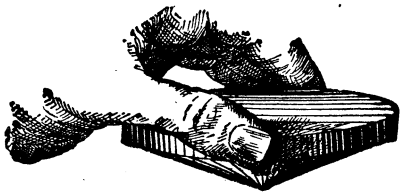


Fig. 13.



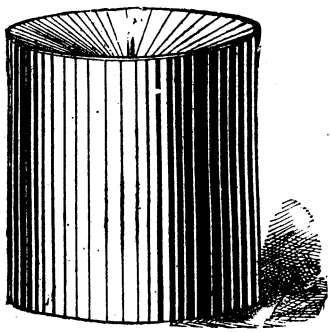


Fig. 14.

investment had been immersed in water. Now the investment completely surrounds the whole.

Without allowing the last investment to harden, a third lot is prepared and in sufficient quantity to fill the cylinder employed, less

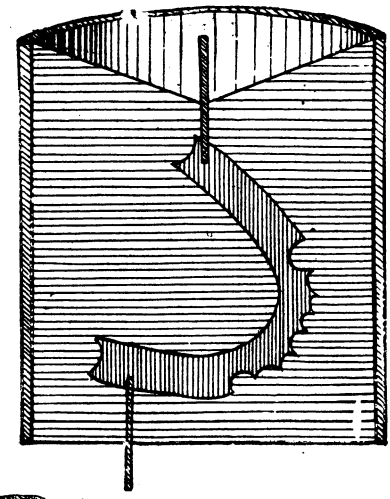


Fig. 15.

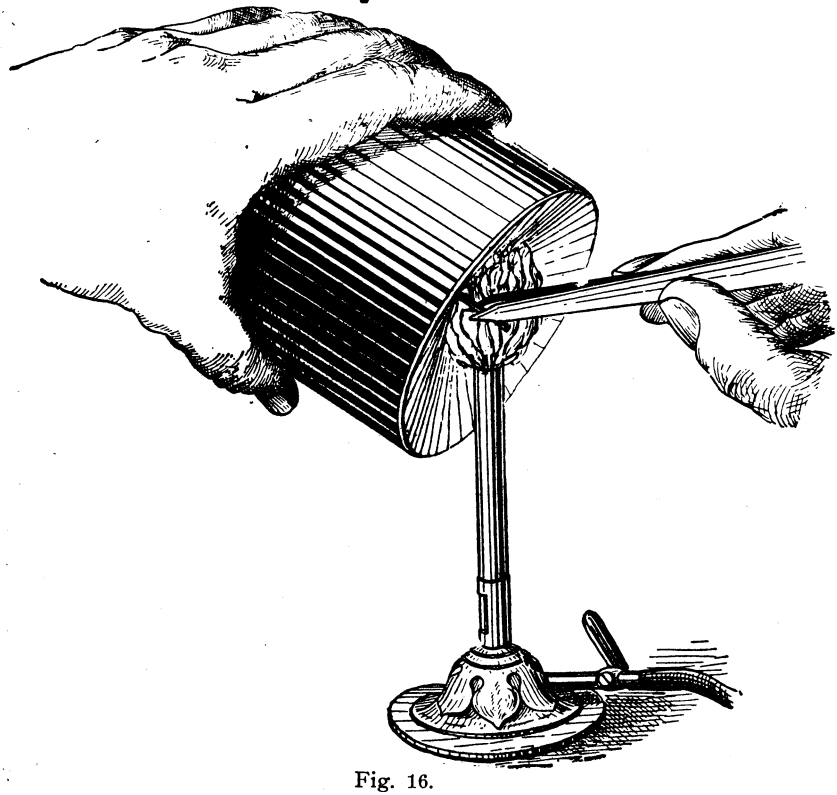


Fig. 16.

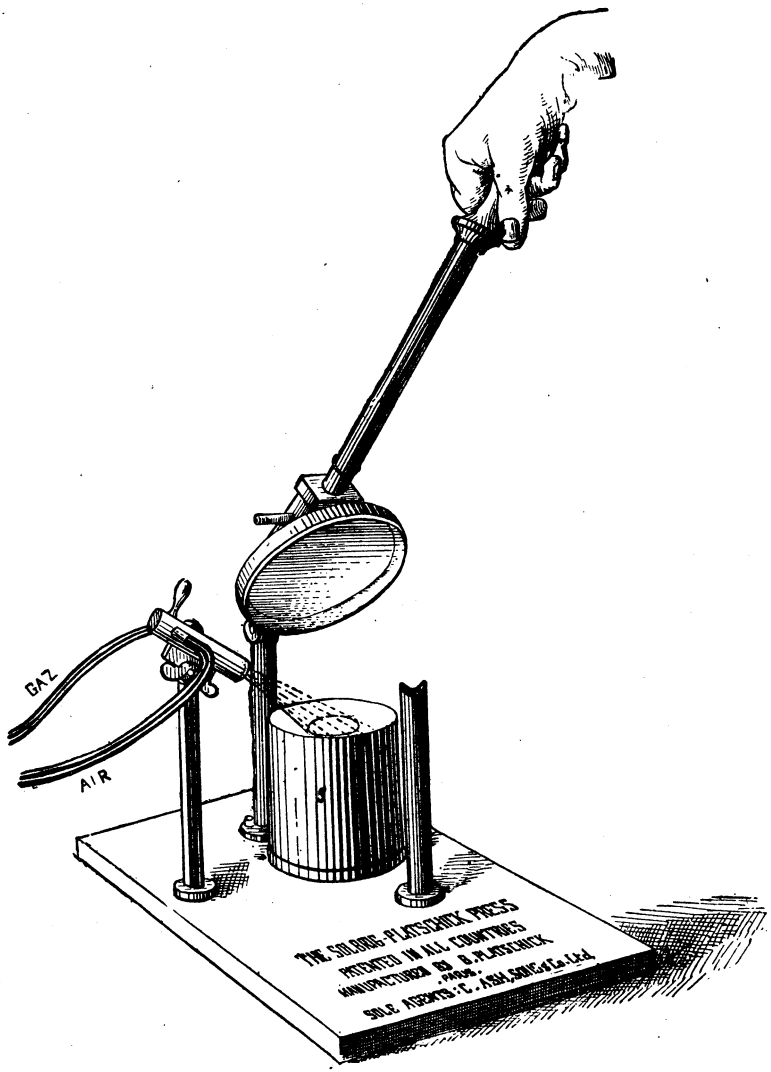


Fig. 17.

the space taken up by the wax form. After having introduced the free end of the sprue in the cone (Fig. 11) and oiled the cone, the cylinder is placed in position as indicated in Fig. 12, taking care that

the edge nearest to the projections which are provided for retention (Fig. 12½) is upwards.

The cylinder is then filled with investment (Fig. 13), and great

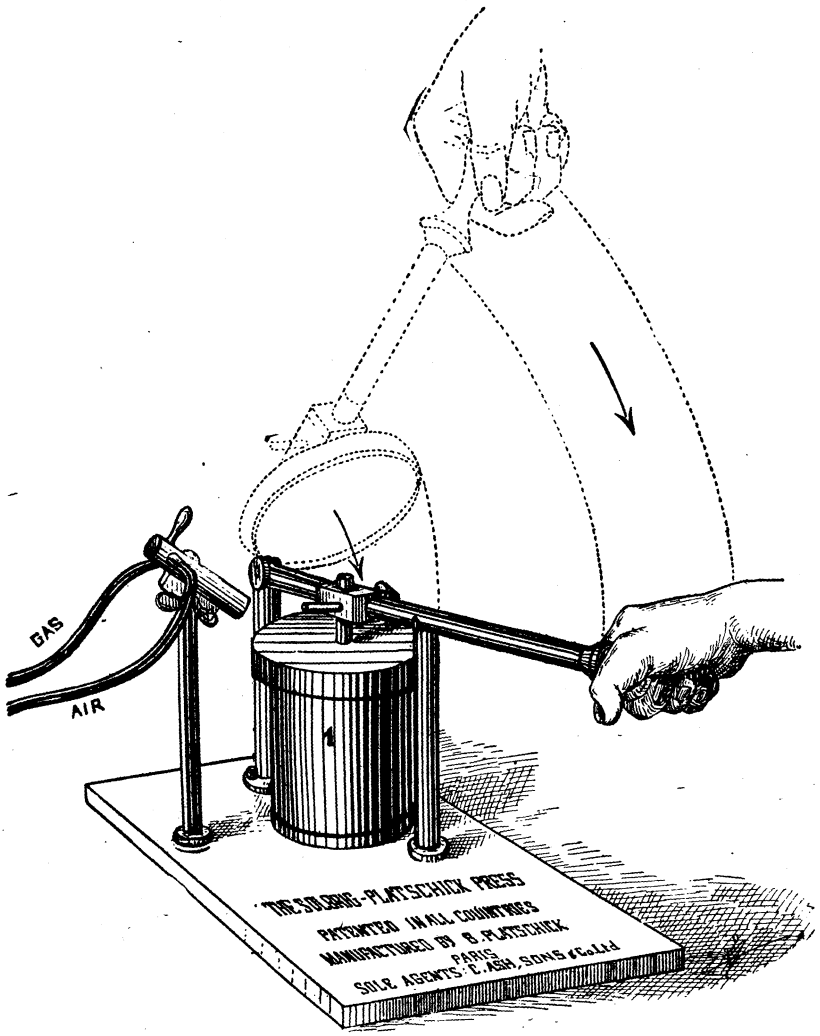


Fig. 18.

care is to be taken when dealing with large pieces of work to hold the piece of work with one hand in the cylinder so that it does not

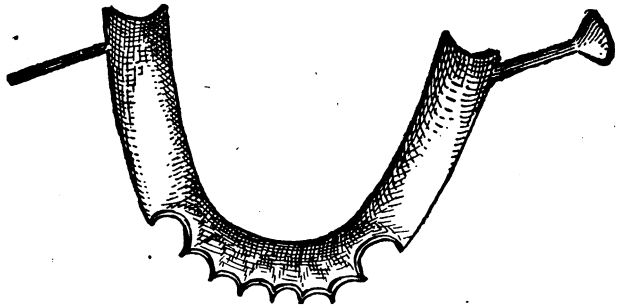


Fig. 19.

move either to the right or to the left owing to its weight, as movement would injure the wax at the spot where the sprue is inserted.

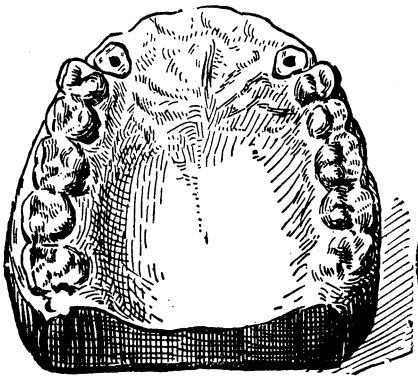


Fig. 20.

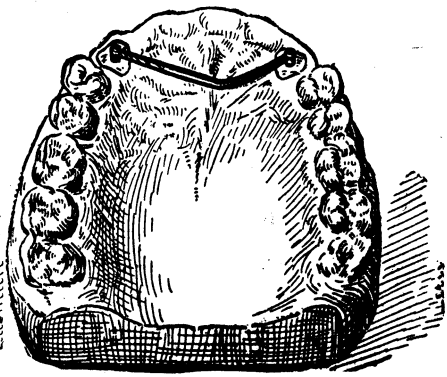


Fig. 21.

When investment is sufficiently dry or hard, the cylinder is inverted and the cone is removed (Fig. 14). The result thus obtained

is represented in section by Fig. 15. The sprue as well as the surrounding investment is slightly heated over a Bunsen burner flame, and sprues are withdrawn from investment with a pair of tweezers (Fig. 16).

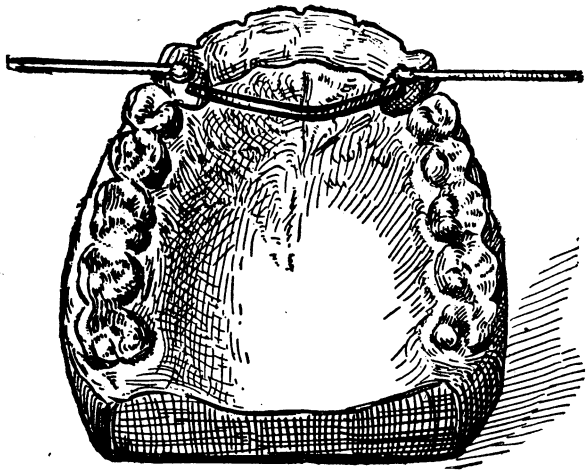


Fig. 22.

The cylinder is then placed in the oven for the purpose of drying the investment (Fig. 5).

The lid of the oven is left open and heat is turned on gently for about ten minutes, using a special burner; after which the cover of

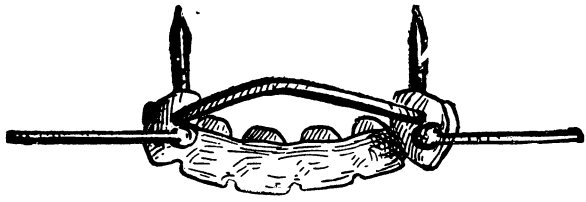
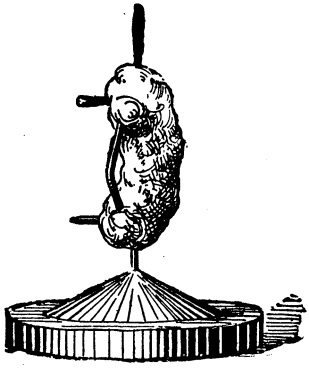


Fig. 23.

the oven is closed, which is supplied with a draught chimney. The heat is now turned on full for about one hour and a half in order to thoroughly dry the investment and burn out the wax.

(The time required for drying the investment varies according

to the size of cylinder used.) We are certain that the drying and the burning out of the wax are perfect when no gas escapes from the channel made by the sprue. During the time the investment is allowed



Figs. 24 and 25.

to dry, three asbestos discs are placed in water, and after having removed from them the surplus of water they are placed in the lid

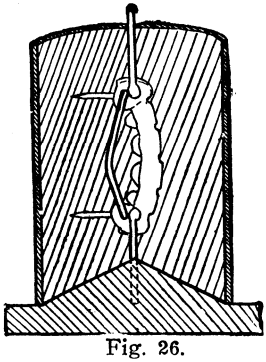


Fig. 26.

Fig. 27.

which corresponds with the cylinder employed; then the lid is fixed to the lever of the press by means of the bolt.

When the investment is dry and wax perfectly burnt out, the cylinder is removed from oven with a special pair of tweezers and it

is placed on the base of the press cone shape standing upwards (Fig. 2).

Sufficient quantity of gold is placed in the funnel shape opening of the investment and the flame of the blow-pipe which is on the press is directed on the gold for fusing (Fig. 17).

When the metal is sufficiently fluid, the lever of the press is quickly closed on the cylinder without ceasing the work of the blow-pipe, and the lid is firmly held down on the cylinder for a minute or so to ensure hermetic closure (Fig. 18).

The cylinder is then allowed to cool for at least several minutes, after which it is placed into water to hasten cooling. The plate may now be removed from investment, cleaned, sprues cut away and polished (Fig. 19).

The second example is that of a bridge in which the six upper anterior teeth are missing (Fig. 20) and having as anchorage the roots of the two cuspids in which two platinum dowels are used for support, platinum being the best metal used in such cases. The dowels having been previously prepared, are placed in position on the plaster model. In order to insure rigidity of bridge, a gold, or composition wire, is bent to suitable shape and the ends of same are soldered to dowels by investing (Fig. 21).

This will enable us to remove bridge and teeth from model without danger of disturbing the relation of the teeth or the dowels. After the teeth are fitted, they are set by using the special wax furnished with the outfit.

The waxing may receive all the attention possible. As it will be later replaced by the gold, it is important to leave a space of the thickness of a sheet of paper between the teeth, and to see that the wax covers them on the lingual surface only; the smallest piece of wax projecting upon any other surface may cause checking of the facing (Fig. 22). A drop of sticky wax is added at the spot chosen for the insertion of the sprue which is secured in it by heating the end of it and allowing to cool. It is advisable to place the sprue on the lingual side of the wax and at one of the extremities of the bridge in order to cause no change in the fit of the wax. At the other extremity another sprue is inserted to provide a vent hole (Figs. 23 and 24).

A small quantity of investment is prepared and applied to the bridge by means of a camel-hair brush. Previous to the applying of the investment the bridge is removed from the model. Then a cylinder

of suitable size is selected; it must be large enough in diameter and deep enough to hold the bridge without any part of it being too near to the wall of the cylinder or to one of the free surfaces of the investment.

The cone corresponding in size to the cylinder is selected and the end of the sprue is introduced into it (Fig. 25). The cone and sprue are now oiled and the cylinder placed upon the cone, sufficient quantity of investment is prepared and the cylinder is filled (Fig. 26). After the investment has hardened the cone and sprues are removed.

The subsequent operations follow the lines of the preceding case, and, if every care has been exercised, a bridge will be found, upon breaking of the investment, where the gold is united to the teeth in the most perfect manner, with the dowels firmly soldered in position.

Great care should be exercised to allow the cylinder to thoroughly cool off before removing investment in order to prevent the teeth from checking. The gold bar is then cut away and the case may be finished as previously described (Fig. 27).

When a bridge includes gold crown, the band should be made of 22k gold. The cusps will cast at the same time as the remainder of the bridge and unite to the band as described below. When a cusp does not unite with a band, it is due to the temperature of the band being too low; this the only cause of such failure.

B. PLATSCHICK.

BACTERIOLOGY OF PYORRHEA ALVEOLARIS.*

BY HAROLD SIMMS, M. D., L. D. S.

(The Dental Record, London, May 1, 1908.)

During the period of the existence of this society the profession of dentistry, like that of medicine itself, has made very great progress, and perhaps this has been most marked on the scientific and especially the pathological aspect. It is on this side, too, that our profession most nearly comes into contact with the sister profession of medicine, and our progress professionally has been coincident with the progress of many of the special departments of science which general medicine now brings to its aid. Thus we have progressed in our knowledge

*Paper read before the Manchester Odontological Society, March, 1908.

along the paths of chemistry, physics, histology and other branches, but this evening my object is to present to your consideration some advances of dental science in the one department of bacteriology, one of the more recent additions to our curriculum, and as you know a comparatively new science.

I have not been able to continue my former researches into this subject to any extent recently, and, therefore, this attempt to deal with the present state of our knowledge of bacteria, particularly in relation to pyorrhoea, has no claim to originality on my part except for certain limited portions; still I am emboldened to proceed, as I understand that we as a society have not previously had the opportunity of considering this aspect of one of the diseases we are commonly called upon to treat; and, therefore, to some few, at least, the subject is a new one.

Bacteriology is not only a subject difficult to work at, but unfortunately it is of such a highly technical nature, that unless one has had a little experience of it, it is apt to form a rather wearisome subject of discourse; therefore, I shall try to avoid referring to the mass of detail of which the subject consists, and keep to the main facts that my photographs are able to illustrate.

As you are aware bacteria are a low form of life on the borderland between the animal and vegetable kingdoms; for convenience they are classified according to shape into the following varieties:

Cocci-Staphylococci, consisting of clumps.
Diplococci, consisting of pairs.
Streptococcii, consisting of rows.
Bacilli-rods.
Vibrios, or comma shapes.
Spirilla.
Thread forms (leptothrix).

Our knowledge of all these forms we derive from their microscopical appearance, from the form they assume when artificially cultivated on special media, and lastly from the effects that follow their experimental inoculation into various small animals, such as rabbits and guinea pigs.

By observing bacteria under these various conditions we are usually enabled to divide them up fairly accurately, so that we are able to determine to what species any particular organism belongs.

Having made these points clear, we now pass on to consider that disease or group of diseases to which the name of pyorrhoea alveolaris has been applied, although alveolar osteitis or chronic suppurative peridontitis, the alternative terms, are more truly descriptive of the pathology.

As you know, the condition is a very common one, and one moreover that is not confined to human beings, for Colyer has drawn attention to its frequent occurrence both in dogs and horses, especially when these animals are under the artificial conditions incident to captivity. Of all dental diseases this is the one most resistant to treatment, and while opinions differ so widely as to the cause and also the pathology of the disease, it seems hardly likely that our attempts at treatment will be more successful.

With the main features of this affection we are all only too familiar, and there are but few points which I need mention.

(1) Probably all *true* cases of Pyorrhoea start at the free margin of the gum as a simple gingivitis.

(2) The involving of the bony alveolus or socket is a secondary stage, but when this does become affected it disintegrates more rapidly than the gums do, and thus we have formed those recesses or pockets between the gum and the root that are so characteristic of this disease.

(3) There is a wide diversity amongst the cases as to whether loss of bony alveolus or suppuration is the predominant feature; those cases where there have been a very great loss of tissue are frequently characterized by comparatively little discharge, and on the other hand one sees cases where there is no perceptible loss of tissue at all, but where there is a well marked discharge. Similarly the presence of tartar is nothing like universal, and nowdays opinion is very strong against this being regarded as a cause of pyorrhoea; when it is present it is almost certainly the result of the early gingivitis.

(4) I need hardly remind you of the marked disposition of the disease to spread both laterally to adjoining teeth and also to the ones immediately above, with the result that by the time the cases are presented to us, a large number has become involved, and we find every stage from a slight gingivitis to complete exposure of the root and consequent loosening of the tooth.

(5) Complications.

Most of us come across an occasional case where the septic state of the mouth is responsible for some form of constitutional disorder; in some cases this may assume the form of general anaemia, and I may say that in every case that has been examined there has been found to be a diminution in the number of the red blood corpuscles; this is a rule not very pronounced, and it is seen in other diseases of septic origin.

Some cases of pharyngitis, laryngitis and antral diseases have been traced to pyorrhoea, but it is much more common for complications to assume the form of disorders of digestion; it is almost surprising that dyspepsia is not more commonly complained of than it is, when one considers the enormous quantities of septic matter that must be taken into the system; the only explanation is that the patient gradually becomes immunized to this auto-inoculation and his system becomes, as it were, vaccinated against the effects of the organism he swallows. Such immunity is of course liable to break down at any time, and then, sometime when the patient is somewhat run down, there commences one of these troublesome complications, the consequences of which in some cases are far from trivial and in a few cases end in septicemia and death. This fact is very well authenticated, and one such death occurred at Guy's Hospital while I was there, when the patient, suffering primarily from pyorrhea, developed septic glands in the neck, which set up cellulitis; this went on to septic pneumonia, general septicemia, and finally death, and all this was directly attributable simply to the septic condition of the mouth.

For some years research has been going on quietly, attempting to prove that we have to deal with what is called an infective disease, that is, one that is due to the activity of one septic micro-organism; the manner in which the disease gradually spreads is pointed out as resembling other infective diseases, but although there is some grounds for suspicion, no one has yet been able to find any one constant organism, and nowadays, we are beginning to come to the opinion that there probably is no *one* special microbe, but that instead there are a number that may be to some extent responsible for parts of the disease, and more especially the later parts.

We cannot find any microbe capable of setting up the early gum inflammation, and many still regard this part as being largely the

expression of general constitutional disease, as some used to regard the whole of the disease to be.

I have come across cases in which the patient had previously suffered from rheumatism, syphilis, diabetes and gout, but there were many other cases where I was quite unable to trace any of these diseases, and my own opinion is that the influence of constitutional diseases has been much over-rated, that it ought only to be regarded as to some extent a predisposing factor, and that the ultimate cause will be found to be local.

This subject was one to which the late Professor Miller paid considerable attention, but he found himself unable to come to any definate conclusions on it, for although he was able to find bacteria capable of causing abscesses to develop in animals, yet no one form of bacteria appeared to be constant, but from the different cases different organisms appeared, and his experience has proved to be a not unusual one.

In describing what we know about the bacteriology it will be convenient to consider it under the following headings.

1. Direct examination of pus obtained from the pockets.
2. Experiments at cultivating bacteria from the pus.
3. Information derived from inoculation of animals.
4. The attempt to formulate a line of treatment based on bacteriology.

1. Microscopical Examination of the Pus:

It is better to obtain a little of the pus on a platinum loop from the deeper parts of a pocket, so as to eliminate the purely mouth organisms. A little of the pus thus obtained is smeared on a thin cover glass, and is then stained with any of the anilin stains, such as gentian violet or carbol-fuchsin, both of which are very effective, while all the blue stains, such as methylene blue and others, are nothing like so useful with mouth bacteria as a whole. If such a preparation be now mounted and examined under a high power, it will be found that the bacteria present are both in number and variety endless, and if we look close enough we shall find that all the varieties I mentioned at the beginning of the paper may be discovered. Thus there are cocci of all descriptions, bacilli, commas, spirals, and many thread forms; in addition a few pus cells may be present, and even occasionally traces of a little blood.

Clusters of staphylococci may always be seen, but they become very much more evident in subsequent experiments.

Amongst the bacilli many varieties may be detected, and of them I would ask you to notice in particular the long-pointed ones known as fusiform bacilli; these organisms are quite unique amongst bacteria, not only for their size, which is usually large (15 u), but also for the curious gradual tapering of their extremities.

They are often slightly curved, and may exhibit a transvere striping in their interior.

Another type of bacteria constantly present, which interest us, too, because of their form, are the spirilla; these are long thin wavy threads, rather difficult to stain, and more so to photograph.

This type of organism we find almost constantly present, even in healthy mouths, but whenever there occurs any oral inflammation, then their number at once becomes enormously increased, and this is especially true in pyorrhea, where the appearance shown in this photograph is very commonly seen, and where the whole field practically consists of these tortuous spirals. They are so fine that unless the greatest care be taken in focussing, their presence may be overlooked. It has been stated that although these spirals increase so rapidly in inflammatory conditions, on the other hand, they are the first to disappear under the influence of treatment, and almost vanish even before the disease itself does.

(To be continued.)

ORIGINAL CONTRIBUTIONS

TOOTHSOME TOPICS.

BY R. B. TULLER.

"Mrs. Maloney, did ye iver have a toot' pulled out?"

"Well, Mrs. O'Fallon, if I had one pulled at-all-at-all, it was pulled out—it wasn't pulled in."

"Oh, hould yer whist! It's smart ye air—Oi don't think! But let me tell ye, Mrs. Maloney, 'tis mesilf has had 'em pulled out an' pulled in; an' pulled up an' pulled down; pulled this way an' pulled that; an' thin diag-*o*-nal."

"Shure, now, Mrs. O'Fallon, that bates annyone Oi iver heard of. An' what's the diag-*o*-nal?"

"Well, that's the worst there is, an' not take gas."

"Was it at the All-ve-o-lar Dintal Parlors ye wint?"

"No, it was to the All-Perfessers-Dintal Parlers Oi wint. Tin dochters an' ivery wan a perfesser av dintal science; no common, ordinary dintists can get a job in there. Say, Mrs. Maloney, did ye iver take gas?"

"No, Oi niver, niver did in me loif, an' Oi don't want anny, Oi don't think. Wan whiff av the vile stuff, when the wind do blow away the flame is enough for me. An' did *ye* take it?"

"Yis, 'twas fer this wan here" (stretching her mouth to one side). "The agony Oi had wid that the day and night before nearly druv me crazy; an' so Oi wint to the All-Perfessers. 'Twas thim who got the diag-*o-nal* which nobody could get—but thim.

"One av the perfessers he come an' tuk a look in me mouth, and he sez, 'Bad, bad; Oi must call Perfesser Hobjones.' He came an' he sez, 'My! but that's a bad one!' An' thin they calls the dean perfesser, an' he sez, ' 'Tis a ba-ad case av ankle losus. Ye'll have to take gas.'

" 'Shure, there's nothing the matter wid my ankle,' sez Oi, 'losus or highsus. 'Tis me toot' that's ailin' me.'

" 'O, yis,' he sez, 'Oi know 'tis yer toot'; but it has an ankle on th' root av it; an' 'tis lucky ye came to us, for nobody in this town can get it out but us, widout breakin' yer jaw!'

"'Put somethin' in to stop the pain,' Oi sez, 'an' lave it alone.'

"'Ah, woman,' he sez, 'ye don't know what ye are sayin'. Do yez want to die? Well, thin, ye will die some day, av ye don't have that bad thing out. 'Tis tin times worse than th' diag-*o*-nal wan we tuk fer ye. If ye wint to wan av thim silk-stockin' high-bucks wid that, they'd charge not less than a hundred dollars; an' thin ye might have syncope follerin' it, an' they'd charge another hundred fer bringin' ye out av that. Do you know, Mrs. O'Fallon, the outrageous way they have av bringing ye out of syn cope?—an' you a lady?'

"'No,' sez Oi; 'Oi don't know what syn cope or shin cope, er whativer ye said, is.'

"'Well,' he sez, 'people *sometimes* go into a collapse—a faint, an' what do thim ruffians do but stand a lady on her head. What do ye think av *that?*'

"'Well,' sez Oi, 'Oi don't want anny av them things; an' Oi wouldn't pay anny man a hundred dollars to pull the whole jaw off me. An' the man that 'ud stan' me on me head, Oi'd kick the face off av him; an' 'twould be about *five hundred* he'd be payin' *me.*'

"'Oh, thim fellers is *robbers.* They'll skin ye alive av ivery cint ye have in yer stockin'. All them as is *honest* sind all such cases to us,' sez the perfesser.

"'An' how much will you be chargin' me?' Oi asks; an' he said, 'To anny one else, twinty dollars—to *you,* on'y fifteen, and two fer the gas.'

"'Well,' Oi sez, 'that's a lot av money to take out a toot'. A dollar was the most Oi iver paid, an' that was fer the diagonal that ye tuk out fer me.'

"'Have ye got fifteen wid ye?' he asks, an' Oi sez, 'No, Oi have but twelve to me name.'

"'Well,' he sez, 'this is not an ordinary extraction—it is a surgical operation. Bein' it is *you,* we'll do it fer th' twelve; but fer hiven sake, don't tell anny one else. G'wan now an' see the cashier an' get yer permit to come into the operatin' room.'

"Well, if it had to be done, it had to be, an' so Oi done as he tole me.

"Whin Oi got into the chair, Oi sez, 'Now Oi'm schared. Don't let annybody go to lightin' a match round here when Oi've got the gas in me.'

"'Oh, niver, niver,' he sez; 'we'll look out fer that. We don't want to blow anny one up, ner get ourselves blowed up. Don't worry. Don't fear annything. It will soon be over.'

"Well, now, Mrs. Maloney, talk about breakin' jaws, and standin' on yer head, 'twas the divil's own time Oi had. They hitched a rubber hose to me nose an' told me to breathe natchural. Oi tho't they had fergot to turn on the gas, fer divil a thing did Oi taste er smell; but Oi sez to mesilf, 'Oi'll wait till he's goin' to do somethin' to hurt, thin Oi'll tell 'em they didn't turn on anny gas.' Ye see, Oi was afeared to be goin' off dippy.

"Thin what do ye think happened? The perfesser in front av me began to grow big like a giant. He pulled from behind him a pair av ice tongs, an' what does he do but walk up deliberate on to me chist, an', kickin' me in th' face, sez, 'Open yer mouth.' Oi couldn't, an' the other perfesser jammed in a crowbar an' pried it open."

"Hivins an' earth!" broke in Mrs. Maloney.

"Wait till ye hear it all. When me mouth was jammed open he clawed in there wid the tongs an' got hould av iverything they would take, an' began to pull. Thin, because it wouldn't come loose, he kicked me under the chin an' split me jaw open, an' thin brought out a big cake of ice."

"Howly Saints!" broke in Mrs. M., again.

"Thin the next thing I knows, wan av thim fellers picks up the dash-board av the chair an' tips me over back, back till here was Kitty O'Fallon standin' on me head loike a clown, an' balancin' on each fut one of thim perfessers sprawled out loike two big toads an' kissin' their fingers to an audience av not less than five thousand people. An' then there was me (when Oi gained me feet) doin' that same thing, an' feeling proud av me act. They all cheered an' thin Oi wanted to do somethin' else to show off me agility—me, respictable Mrs. O'Fallon, mother av nine children.

"So, thin there was a horse there and the clown comin' forward to take me foot an' help me on. He wanted to do somethin' smart an' funny av course, an' so he hists me clean over the horse onto the ground. That was too much. The Oirish was up in me, an' Oi rushes round, jumps up in the air an' smashes the two feet av me in his face. But what do you think? Instead of his goin' down, 'twas me that walks roight up on his head; an' thin what does he do but hop,

as light as air, onto the horse, an' the ringmaster cracks his whip an' we were off.

"No, not onto the ground, but goin' loike the wind round an' round; he standin' on one foot on the saddle an' me—Biddy, Oi'm ashamed to tell ye, but 'tis true—me standin' one foot on his head and holdin' the other in me hand stuck out straight an' high as me shoulder, an' me skirts flyin' in the wind; an' the while the horse was goin' round an' round th' ring, an' jumpin' hurdles.

"Was Oi ashamed? Not thin. I was light as a feather an' happy as a flyin' bird. 'Let her go faster, faster,' Oi yelled; an' iverytime we wint over a hurdle Oi yelpt, 'Hup—hup!' loike they all does, an'——

"Well, the nixt thing Oi knew, someone was slapping me back an' sayin', 'Spit out the blood. Come on now, wake up an' spit out the blood. Come now, it is all over. Wake up, wake up.' An' be-gorra, here was Oi sittin' in the same chair; but me moind wasn't quite balanced yet, an' Oi sez, 'Where is me beautiful spotted Arabian horse. Oi'll keep him anny way.'

"But he was gone; an' 'twas thin the shame av it tuk hould av me; but I held me peace. 'Twas no use.

"But, begorra, Biddy Maloney, wid all the kicking in th' face an' breakin' me jaw an' standin' me on me head—which wasn't rale, of course—Oi think if Oi iver have toothache agin, Oi'll take the gas. Wid all, there wasn't a pain in the whole thing. Faith, but Oi have a grumblin' in me jaw roight now on the other side."

"An' phwere did ye say the place was, Mrs. O'Fallon? Oi have a toot' that do be akin at toimes. But, hivins! Oi hope it don't be havin' an ankle to ut, losus er highsus, as ye said, Kitty. Twelve dollars would be too much to be payin' fer a bit av a dream—wid so much bad in ut anny way. Begorra, but it is Biddy Maloney that would loike to have been to that circus, ha, ha, ha, seein' ye doin' thim stoonts."

"Praise th' Lord, but Oi didn't be doin' 'em rale, 'an me the mother av nine children. 'Tis laughin' gas they do be givin' ye, Biddy, whativer that is. It isn't the stinkin' stuff we burn at all. That's what fooled me; Oi was filled wid it an' didn't know it. Oh, but it made me that light an' airy! 'Twas th' nearest to flyin' loike a bird Oi'll iver get. My! the high-larious sinsation Oi had. 'Twas

loike a joy-yus bird skimmin' th' meadows an' finces wid no fear av fallin'. But Oi'm glad now it wasn't rale, an' me th' mother av nine children, some av thim growd up an married, an' me a gran'ma.

"But 'twas young enough Oi was fer thim few minyuets. Oi think Oi better be after goin' home an' put a hot wather bag to me grumblin' jaw."

"Oi say, Kitty," says Mrs. Maloney, "if ye don't get better av it, lave *me* know when ye are goin' down. So long. Blame this ould toot' av mine! Oi b'lieve 'tis goin' to chune up. Well, it'll be gas fer me if it do."

DEVITALIZATION OF THE DENTAL PULP WITH ARSENIOUS ACID, TREATMENT OF ROOTS AND ROOT FILLINGS.

BY THOMAS L. LARSENEUR. D. D. S., CHICAGO, ILL.

(CONTINUED FROM JUNE.)

The success of the following operation is dependent upon the degree of asepsis which is maintained; consequently, before proceeding with the removal of the pulp, the rubber dam should be applied to the tooth from which the pulp is to be removed. The treatment is now removed and the cavity wiped out with a pledget of cotton saturated with tincture dialized iron to neutralize the arsenious acid and prevent further absorption; this may be followed by washing with alcohol.

All the instruments which are to be used should be thoroughly sterilized, such as burs, broaches, bristles, etc. This may be done by dipping them in 95 per cent phenol; in so doing, the danger of infection is greatly lessened and the soreness which results after removal of the pulp will be considerably reduced.

To ascertain if the pulp is *sufficiently* devitalized for removal, large rose burs are used to remove all softened dentin and thoroughly open the pulp chamber, giving such form as to allow free access to the canal of each root. This rule should be followed carefully in every case regardless of the tooth substance which is to be sacrificed. The health of the tooth is dependent upon the thorough removal of all

the pulp, sterilizing and proper root filling, which will be spoken of further.

Compressed air is very valuable in this treatment, as it enables the rapid removal of all tooth fillings, and if the hot air syringe is used with alcohol, the root canals will be located with much more ease; in fact, the use of compressed air will be a great adjuvant in this operation.

Pyrozone should be used freely to wash out the cavity; it is of great assistance in this treatment, as after its use the cavity will always be found clean and free from debris of tooth substance; its antiseptic action also favors it.

A smooth broach may now be introduced in all the root canals, care being taken not to puncture the pulp by following the wall of the root canal and carrying it to the apex; this will indicate direction and the length of the root. If there is no response to this operation, the pulp may safely be removed without any fear of inflicting any pain to the patient. A nerve bristle (sterilized) is then introduced into the canal, taking the same care not to puncture the pulp, thus causing hemorrhage, which is always more or less unpleasant to deal with. After the broach has been introduced to the apex, it is advisable before rotating it to pull it down slightly, so that if the apex is large it will not get caught and cause fracture of the broach, which would be very unfortunate and hard to remove.

The broach may now be gently rotated a few times and the pulp removed whole; should it break, the same operation may be repeated. When dealing with very small canals, it is wise to locate their length and direction with a smooth broach; small canals may be enlarged by means of the Kerr broach, which is supplied in different sizes and are very convenient in such cases. Enlargement may also be accomplished by means of chemical agents; in such cases the walls of the cavity should be varnished to prevent the action of the acid upon the dentin. A drop of a 50 per cent sulphuric acid is deposited at the mouth of the canal to be operated upon. The finest size of Donaldson's or Excelso canal cleanser is then passed into the canal as far as it will go, using a pumping movement to carry the acid further into the canal and to scrape the canal walls softened by the action of the acid. The acid chemically destroys any organic matter—i. e., pulp tissue—present, releases the calcium of the dentin from its combination, and forms calcium sulphate,

which is mechanically removed by scrapers. The operation is continued until the apex of the root is reached.

In multirooted teeth, the largest canal is first entered and the pulp removed. This canal may then be loosely filled with a twist of cotton saturated with some antiseptic. The next largest canal is cleansed and treated in the same manner, and after this the smallest canal.

The canals may now be thoroughly dried out with the hot air syringe, which may be hastened by previously washing them with alcohol. They are now ready for treatment, and under no consideration should a root be permanently filled without previously being treated, and this for two reasons: First—The removal of the pulp has caused a mechanical injury to the surrounding tissues, and it is not right to rely on nature only to take care of it; so it is of great importance that nature be assisted to restore them to health. Second—No matter how carefully has asepsis been practiced, there may be germs in the canal which would be carried to the apex by the root filling and would later develop and cause serious troubles.

There are several preparations used as a dressing after the removal of the pulp, some of which are: Creosote (beechwood), phenol, trikresol and formalin (Buckley's formula), Black's 1, 2, 3, oil of cloves, eucalyptol, campho-phenique, oil cinnamon (Ceylon).

I advise the use of creosote (beechwood), as I find it much less irritating than any of the others above mentioned; it is also more penetrating.

One of the quickest and easiest ways of applying this dressing is to saturate an "aseptic absorbent point" (Johnson & Johnson) with the antiseptic and to place it in the canal with tweezers, sending it to the apex; this point absorbs enough of the medicine to fully saturate the canal with it. One of them may be placed into each root canal in no time; they may be previously cut to the desired length suitable to that of the root. The cavity may now be sealed with gutta percha and the patient dismissed for a week or ten days. At the next sitting, if there is no evidence of soreness of the tooth, nor tenderness to percussion, the rubber dam may be applied and the roots filled; should there be any soreness, the dressing should be renewed and the patient dismissed for another week; it is understood that the rubber dam should be applied for this treatment.

In case of hemorrhage, applications of pyrozone will act as a styptic and also decompose and remove the blood; adrenalin-chloride in weak solutions may be used to good advantage. In these cases of hemorrhage, the tooth should never be sealed before the bleeding has ceased.

If tenderness appears immediately after extirpation of the pulp, it will promptly subside upon dressing the canals with a saturated solution of menthol in chloroform, filling the canals loosely with cotton or using campho-phenique, hermetically sealing the cavity. The gums overlying the tooth may be painted with tincture iodine, tincture aconite and chloroform, equal parts, or tincture iodine, menthol and chloroform, equal parts. Before filling, the canals should be thoroughly washed out with pyrozone and desiccated with alcohol.

(To be continued.)

"MOST IMPORTANT MECHANICAL AND CHEMICAL PROPERTIES OF SILICATE AND ZINC-PHOSPHATE CEMENTS."

DR. MAX KULKA, TESCHEN, GERMANY.

Continued from June.

Paper read at the seventy-ninth meeting of the Deutsche Naturforscher & Arzte at Dresden, and at the yearly meeting of the Landesverband Ungarischer Stomatologen at Budapest, September, 1907.

The short end of this bracket carries a short prolongation C, which can be moved downwards by a hinge and can be fixed horizontally by the key S; C is hollowed cylindrically at its end and has at its outer surface a threading with nut D.

Into the boring of this short prolongation are inserted the pieces which serve for the determination of the degree of adhesion, and they are fixed in it by tightening the nut.

To the vertical part of the steel arm is attached, a steel lever E, 30 cm. long and 7 mm. thick, which by means of a ball and socket joint can be shifted upwards and downwards, can be turned horizontally and can be fixed in any position and situation by means of a screw key. (Figs. 8 and 9, page 20.) This lever is divided on its one side into 15 parts, on its other into 10 parts, starting from its

pivot; this division shows corresponding marks of division with the respective figures.

The further arrangement of the apparatus and the parts belonging to it will be explained shortly in connection with the various tests.

TESTS OF PULLING STRENGTH.

In the short prolongation of the machine, a round, strong, steel plug was fixed, by means of tightening the nut; the plug has at its free end a socket. In this socket rides a hanging yoke, which at its lower ends is bent in the shape of a hook towards its front (Fig. 1).

The sample for the pulling test was now stuck through the conical boring of the ring (Fig. 3), which has on either side a round prolongation or rod, so that only the cylindrical part of the sample could be seen from the outside.

The part of the sample, which was outside of the ring, was placed in a ferrule, provided with a spring, which is in the hollow hook H; it was then fixed by tightening the nut which fits upon the threading cut into the outside of the hook (Fig. 4).

The hook of the ferrule was now connected with a tackle F, which was fixed in the base plate and was quadruple; at the free end of the rope, which runs on rollers, a hollow metal vessel E was suspended (Fig. C).

I apply the tackle fixed in the base plate, in order to prevent any possible lateral stress and any bending stress, which may be easily caused thereby; the sample is in the present case, by the always downward-acting pull, subjected exclusively to a pulling stress. In order to avoid, as far as possible, any concussion of the sample, be caused by adding or exchanging the weights, I used a hollow metal vessel. Lead shot was run into the vessel until the sample tore. That way I obtained a steadily and evenly increasing stress.

The final weight was determined by weighing the weighing vessel on an ordinary scale, after the sample had tore, and by quadrupling the weight thus found.

Since all my measurements were made under conditions, same form, same cross-section and same length of the samples, the final loads are in the proportion of the figures showing the pulling strength.

The resulting figures are set forth on Table III.

TABLE III.

Figures of pulling strength, in arithmetical means.

Model Fig. 2b.	Diameter, 4 mm.
Ascher's Artificial Enamel	291½ lbs.
Speier's	276½
Harvard Cement	241
Hoffman's Porzellanoid	204¼
Schonbeck's	172¼
Smaltid	172¼
Love's Agate	166½
Harvardid Improved III	154
Wolfson's	158
Astral	184
De Trey's Cement	120
Lynton's	99
Harvardid IV	161

I pass now to the determination of the

BREAKING STRENGTH.

For the determination of the breaking, by bending, strength, I used sample pieces of like shape as for the pulling tests (Fig. 2b).

This time, as Fig. 5 shows, the samples were fixed horizontally, so that they were sunk into a sleeve which at its lower end was shaped conically.

The sleeve with the sample contained in it was placed in the short prolongation C of the apparatus and was fixed by tightening the screws D. A coil spring in the sleeve, which bears against the head of the sample, presses the cylindrical part of the sample outward. At the end of the cylindrical part of the sample, a metal disk S (Fig. 5 and 5a), was now placed upon the first millimeter of the sample, and the hook of the disk was then connected exactly as before with the quadruple tackle. By continuous pouring of lead shot into the weighing vessel, the samples were submitted to a bending stress until the cylinders broke off.

Calculated in the same manner as before, I found:

TABLE IV.

Figured of breaking strengths, in the arithmetical moans. Model Fig. 2b.

	Diameter, 4 mm.
Ascher's Aritificial Enamel	25 lbs.

Dr. Speier's New Silicate Cement	25
Harvard Cement	20¼
Harvardid Improved IV	16
Dr. Wolfson's Improved Plastic Porcelain Filling	16
Love's Agate	15⅛
Hoffmann's Improved Porcelainoid	15⅛
Dr. Schonbeck's Silicate Cement	15
Smaltid	15
Harvardid Improved III	13
Astral (Ravitzor's)	10½
De Trey's Impervious Cement	8½
Lynton's	8 1/3

Since the breaking strength can be determined by experiments with the greatest certainty and very exactly, we must consider the figures found for the breaking strength as being the decisive figures, they were therefore used for the calculations of the absolute co-efficient of the strengths of the cements.

TABLE IVa.

Absolute co-efficient of the strength of the cements (determined by multiplying the figures found by 7/4 — 1/P.

	Per 1 mm.
Ascher's Artificial Enamel	15 lbs.
Speier's	13¾
Harvard's Cement	11½
Harvardid Improved IV	9
Wolfson's	9
Love's Agate	8¾
Hoffman's Porcelainoid	7¼
Schonbeck's	8
Smaltid	8
Harvardid Improved III	7¾
Astral	6
De Trey's	5
Lynton's	4 2/3

CRUSHING STRENGTH.

For the determination of the crushing strength I used cylindrical same as Fig. 7a.

They were placed, as Fig. 8 shows, under a nick in the lower edge of the lever, which is removed 2 cm. from the pivot, and were laid on a small steel anvil (G) which is shown as inserted into the corresponding socket of the base plate.

The weighing vessel was suspended on the free hook-shaped end of the lever, and lead shot was poured in continuously, until the little blocks fell to pieces or were crushed.

The weight of the lever, reduced to its pivot, amounts to 900 gr. This weight, plus the final load multiplied by the figure 15, gave the final pressure at which the block is destroyed and is taken to be the measure for the crushing strength of the tested material.

TABLE V.

Crushing Strength.

Since a determination of the compressed cross-section was impossible (defacto, only a line was compressed) the smallest figure obtained in these tests (Lynton's, 84 lbs.) was taken as the unit, 100, and I obtained therefore, by multiplying the figures ascertained for the other cements by 100/42.8, the following proportions of the various crushing strengths.

Ascher's Artificial Enamel	317	lbs.
Astral	265	
Wolfson's	257	
Harvard Cement	249	
Harvardid Improved III	180	
Schonbeck's	206½	
Smalted	206½	
Speier's	202½	
Harvardid Improved IV	180	
De Trey's Cement	178	
Love's Agate	178	
Hoffman's Porcelainoid	131	
Lynton's	85½	

(To be continued.)

DENTAL GRADUATES

COMMENCEMENT AT ILLINOIS.

The seventh annual commencement exercises of the College of Dentistry, University of Illinois, were held in Handel Hall May 29, with George W. Cook, B. S., D. D. S., dean of the college, presiding. Class roll was called by Charles E. Jones, B. S., D. D. S., Secretary of Dental; faculty degrees were conferred by Edmund Janes James, Ph. D., LL. D., President of University; the doctorate address was delivered by Enos J. Perry, D. D. S., and the valedictory by Melvin E. Pontius, D. D. S. Following is class roll.

Carl Frederick Bandelin
Frank Joseph Bernard
Clyde A. Budworth
William Theo. Burke
Chester Walter Daye
Frederick Edward Ebert
William Francis Earley
George Theodore Ehrlich
Noah Z. Feldsher
Jacob E. Green
Michael Francis Hough
Hugh Hopkins
Harry Lysander Jones
Francis L. Joyce
Henry Joseph Kaufman
Edward F. Klumb
Harry Melvin Korshak
James A. Larsen
Walter T. Mitchell
Melvin E. Pontius
Francisco Ponce-y-Collantes
Paul Harold Ramsey
Reuben Alexius Stone
Elmer B. Stoughton
Edwin Paul Swatek
Harry Karl von der Heydt
Clyde Herbert Warner
Maud Muriel Warner
Henry Lyman Willcox

CHICAGO COLLEGE COMMENCEMENT.

The twenty-sixth annual commencement exercises of the Chicago College of Dental Surgery was held at the Garrick Theater, Chicago, May 26. Degrees were conferred by Truman W. Brophy, M. D., D. D. S., LL. D., dean of faculty; faculty addresses by E. J. Perry, D. D. S., and closing address by Henry B. Brown, A. M., President of faculty. Folowing is class roll:

Abrahamson, Solomon
Barclay, James Alexander
Bomer, Frank Fred
Bondy, Raymond Marble
Bursman, Renze
Christiansen, Cecil Elmer
Connors, John Thomas
Cook, Frank

Cibrowski, Edward Gregory
Collier, Leon Bernard
da Costa, David Emile
Denton, Alexander Muir
Derivan, Henry Bernard
Dolson, James Edward
Drees, Lambert John
Eberly, Noah
Eggen, Walter Neilius
Fellman, Charles Edward
Fortelka, Charles George
Featherstone, Paul Emerson
Grant, Elmer La Rue
Gregg, Victor Hugo
Goodrich, Herman William
Hamilton, Frank L., Ph. G.
Hartley, Ralph Rupert
Haselton, Harve Barden, Jr.
Hall, William Arthur
Henderson, Ervin Leslie
Hansen, George Henry
Hallock, Paul
Heidorn, Herman William
Homan, Menno Jakob
Hurtgen, Frank
Hurwitz, Leon Napthaly
Kostowski, John Lange
Kuttler, Frederick Charles
LaPierre, Felix Joseph
Lee, Bert Corwin
Lovett, Guy Dudley, A. B.
McCulloch, Robert Andrew
McKenty, Mark Vincent
Martzloff, Paul, D. F. M. B.
Mellinger, Harold Augustus
Meyers, Arthur Carl
Middeldorf, Louis William
Mithus, Edward
McIntyre, William James
Pearce, Arthur John
Piperno, Arrigo, M. D.
Poyner, Frederick A.
Rosenzweig, M. Isador
Rundle, John Edison
Shields, Herbert Berzelious
Sebolt, Frank Benjamin
Scheffel, William Emanuel
Smith, Charles Ernest
Schock, George Frederick
Stryker, John Oscar
Sykora, Lawrence John
Sheeran, Michael Joseph
Terry, Thomas Mariener
Ury, Lewis Benjamin
Van Loon, Justus Antoni Wilhelm, M. D.
Van Law, Earl George
Wight, David James
Wilcox, Brainard A.
Watson, Arthur William
Ziegler, Lyman Turner

NORTHWESTERN UNIVERSITY DENTAL SCHOOL—1908 GRADUATES.

Adams, John Melvin
Alexander, Howard
Babcock, Clarence Udelmar S.
Baker, John Henry
Baker, Lloyd Lewis
Barnsback, Chalmer Truman
Beck, James Edwin
Berkshire, Claude Edward

Bigler, Chester Arthur
Bird, Charles William
Boman, Anton Leroy
Bow, John McIntyre
Bremner, Maurice David Kaufman
Brighouse, Albert
Brown, Fred
Buckley, Michael Joseph
Burke, Harry John
Burton, Jesse Francis
Cadmus, John Harvey
Calvert, James Rex
Campbell, Albert William, Ph. G.
Carlstein, Aaron
Chady, Roy Jay
Chulock, Aaron William
Closson, Arthur Dunbar
Cochran, William Alfred
Cole, Alvie Sylvester
Craig, Thomas Day
Crossan, Orval Alexander
Crowley, Edward Timothy
Cummins, Harry Ray
Dedon, Victor William
Diehl, Fred Steuben
Dixon, George Edward
Dohrmann, August Wilhelm M.
Donovan, John Morrisson
Dooley, Chase Creel
Dunn, Ernest Lucien
Egan, Thomas Francis
Elsnau, Theodore Max Alvine
Evans, Ernest Isaac
Exon, George Edward
Frankhauser, Homer Enoch
Field, William Sydney
Follett, Walter Carlous
Foster, Leroy Allen
Freel, Floyd Wheatley
Friedman, Samuel Leonard
Galbraith Logan Blaine
Gill, William Herbert
Gist, Nathan Howard
Gordon, David Jesse
Graves, Idella Elnora
Groves, Francis Wendell, B. S.
Gulstine, Herman Philander
Hamel, Carl William
Harris, Joseph Garfield
Hartt, Alice Constance
Hauser, Edward John
Heisler, William Frederick
Henderson, Olive Myrtle
Hixon, Clyde Leroy
Hogan, Mark Francis
Holmquist, David Elven
Hoover, Chester Will
Johnson, Lawrence Raymond, as of the class of 1907.
Johnson, Sidney Harold
Jones, Ramon
Kauffman, John Calvin, Jr.
Kennedy, Claude Monticue
Keyes, John Francis
Krembs, Franz Joseph
Krembs, Moritz
Lacaze, Charles Andre
Langstead, Robert Dave*
Langton, Seth Alma, Jr.
Lazier, Harry Austin
Leavitt, Samuel Harold
Legvold, Gerhard Ferdinand
Leininger, Arthur Aaron
Lemmon, Walton Francis
Lyding, John Daniel
Ldying, Joseph Benjamin
Lynch, Oliver Edward
McKay, Grover C.

McKay, N. Bruce
Macdonald, David
Martin, Orlando Elmer
Mason, Lloyd Chester
McBroom, Samuel, as of the class of 1907
Mead, Roy Eugene
Meisel, Harry Benjamin
Mertz, Arthur Edgar
Meyer, George Edward
Middlemas, Bessie E.
Mills, Henry Louis
Morange, Roderick Munro
Morgan, Walter A.
Mott, Walter Washington
Mulford, Thomas Tillinghast
Murdy, Aethel Thompson
Myers, Walter Alen
Oleson, George Henry
Olson, Axel Frank
Ott, Leroy Theodore
Parker, Clement Emerson
Pasternacki, Leon P.
Pfeiffer, Carl Elmer
Rice, Joseph Bliven
Rich, Albert Clarence
Richards, George Franklin, Jr.
Richter, Louis Carl
Roberts, Clarence Albert
Roberts, Edward R.
Rosheim, Elling I.
Salisbury, Elmore
Savage, Charles Sumner
Savage, Samuel Robert
Scheffer, Bernhardt Hampden
Schmook, Theodore, Jr.
Schoenbrod, Abraham Morris*
Schoonover, Ned Wesley
Schultze, Louis
Scott, Albert Edbridge
Sebelius, Carl Elstrom
Shaddle, Charles Gilbert
Sherman, Orville Manson
Smith, Roy Orval
Stam, Russell Zeigler
Stanley, John Gruell
Starry, Thomas Edward
Stephens, George Edmund
Stiehm, Paul Edward
Swisher, Fred J.
Taylor, Guy Everett
Tharp, Horace John
Thomason, Albert Robert
Thompson, Ellish Howard
Toraason, Goodwin
Uebele, Harvey Milton
Walbridge, Ernest Lucien, Ph. G.
Wallace, Ray Harold
Walther, Arthur Frederick William
Watts, William Henry
Welch, James Richard
Wick, John Henry
Wilen, Arthur Nelson
Wintermute, Charles Ackerman
Wittenbrook, Frederick Holmes
Wolson, Abraham Morris
Yessler, Arthur M.
Young, Charles W.
Zemke, Arthur Wilbert

*Completed course, but not of age at the time.

MEETINGS

New Jersey State Dental Society will meet in Asbury Park, July 15, 16, and 17, 1908.

Ohio State Dental Society will meet in December, 1908.

South Dakota Dental Society will meet in Lead, S. D., July 22 and 23, 1908.

Southern Illinois Dental Society will meet in Greenville, Ill., Oct. 27, 1908.

Virginia State Dental Association, Richmond, July 14, 15 and 16.

Wisconsin State Dental Society will meet in La Crosse, Wis., July 21, 22 and 23, 1908.

NATIONAL DENTAL ASSOCIATION.

The twelfth annual meeting of the National Dental Association will be held in Boston, Mass., July 28-31. An extensive program, with many chair and table clinics has been prepared and the following papers in the sections will be read:

Section 1 presents the following papers:

E. P. Dameron, Chairman, 58 De Menil Building, St. Louis, Mo.

H. E. Kelsey, Vice-Chairman, Commonwealth Bank Building, Baltimore, Md.

J. V. Conzett, Secretary, Dubuque, Iowa.

Prosthetic Dentistry, Crown and Bridge Work, Orthodontia, Metallurgy, Chemistry and allied subjects.

Dr. H. A. Pullen of Buffalo, N. Y.—"Orthodontia."

Dr. Geo. H. Wilson, Cleveland, Ohio—"Some phases in the Construction of Complete Vulcanite Dentures" (exhibiting 30 to 40 slides, showing appliances and points in construction).

Dr. Charles Channing Allen, Kansas City, Mo.—"Metallurgy."

Section 2 presents the following papers:

A. R. Starr, Chairman, 10 East 92d street, New York, N. Y.

J. T. Lippincott, Vice-Chairman, 1427 Walnut street, Philadelphia, Pa.

V. S. Jones, Secretary, Bethlehem, Pa.

Operative Dentistry, Nomenclature, Literature, Dental Education and allied subjects.

Dr. Burton Lee Thorpe, St. Louis, Mo.—"The Contributions of New England Dentists."

Dr. Geo. W. Weld, New York City—"Characteristics of Calcified Tissues in Two Complete Sets of Human Teeth, free from Caries."

Dr. Joseph Head, Philadelphia, Pa.—"The Protecting Action of Saliva from Decalcification of Enamel by Acids."

RAILWAY RATES.

New England Association, which includes the territory of New England, grants a rate of a fare and one-third on certificate plan. Trunk Line Association, which includes the territory of Buffalo, Niagara Falls, N. Y., Erie and Pittsburg, Pa., Bellaire, Ohio, Wheeling, Parkersburg and Huntington, W. Va., and points east thereof, except New England, a rate of one and three-fifths, also on certificate plan. All other territory grants summer tourists rates in existence and effective to Boston during the summer. Those using the Trunk Line rates will deposit their certificate, together with 25 cents, with the Secretary, Dr. C. S. Butler, immediately on arriving at the meeting.

Section 3 presents the following papers:

Dr. J. McMillan, chairman, Eleventh and Locust streets, Kansas City, Mo.

L. D. Archinard, vice-chairman, New Orleans, La.

F. E. Cobb, secretary, 307 Masonic Temple, Minneapolis, Minn. Oral Surgery, Anatomy, Physiology, Histology, Pathology, Etiology, Hygiene, Prophylaxis, Materia Medica and allied subjects.

Dr. Clyde Davis, Lincoln, Neb.—"A Method of Treatment of Purulent Eupyema of the Maxillary Sinus."

Dr. Eugene S. Talbot, Chicago, Ill.—"Acidosis and Indicanuria in Diseases of the Mouth, Jaws and Teeth."

Dr. Thomas B. Hartzell, Minneapolis, Minn.—(Subject later).

Dr. Arthur H. Merritt, New York City—(Subject later).

NORTHERN INDIANA DENTAL SOCIETY.

The twentieth annual meeting of the Northern Indiana Dental Society will be held at Fort Wayne, Ind., September 8, 9, 1908. An excellent meeting is expected.

VIRGINIA STATE DENTAL ASSOCIATION.

The meeting place of the Virginia State Dental Association has been changed to Richmond, Va., Murphy's Hotel Annex, July 14, 15, 16, 1908.

W. H. PEARSON,
Corresponding Secretary.

VIRGINIA STATE DENTAL ASSOCIATION.

The thirty-ninth annual session of the Virginia State Dental Association will be held at the main hall of the Medical College of Virginia, Richmond, Va., beginning July 14, 1908.

The intention of the society is to make this the most successful meeting in the history of the organization. Clinics will be given and papers read by eminent members of the profession.

All ethical practitioners are cordially invited to attend.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota state board of dental examiners will begin Monday, July 20, 1908, beginning promptly at 9 o'clock a. m. and continuing three days, at Lead, S. Dak. All persons desiring to take this examination must make application to the secretary, and send fee of $10.00 at least one week prior to the above date. No candidates will be received for examination who do not make application as above specified. Applicants are required to bring dental engine, filling materials, articulators, teeth, and all appliances and materials necessary to do crown and bridge work.

G. W. COLLINS, Secretary.

MONTANA STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of the Montana State Board of Dental Examiners will be held in Helena, commencing the second Monday in July, 1908, and continuing three days. All applications, and fee of twenty-five dollars, should be filed at least ten days prior to the meeting. Application blanks, and the dental laws of Montana, which every applicant is expected to read before the examination, will be furnished upon application to the secretary. Vulcanizers, and dental engines, without handpieces, will be furnished.

D. J. WAIT, Secretary,
103 Broadway.

MISCELLANEOUS

FLAT RIDGELESS JAWS.

With the flat ridgeless jaws better success can be attained with swaged metal plates than with rubber, and that, too, without the vacuum cavity.—*L. P. Haskell, Items of Interest.*

GOLD INLAY.

After placing matrix of gold roughly, it was packed full of moss-fibre gold, removed and solder placed over the gold; then replaced, re-adapted to the margins with burnishers and solder placed in proper contour. Investment unnecessary.—*Clinic by W. O. Fehman, Northwestern Dental Journal.*

TO CEMENT ARSENIC IN CAVITY WITHOUT PRESSURE.

Mix the cement rather thin and place a small drop on a small bit of paper and carry the paper to the cavity with the pliers. Press to place with a burnisher. The paper facilitates adjustment to place and prevents cement adhering to instrument.—*C. B. Warner, Avon, Ill.; Tri-State Dental Quarterly.*

REPAIRING AN AMALGAM FILLING.

To repair an amalgam filling, dry it thoroughly, freshen the surface and use a little soft amalgam at first, build it as you wish, being careful to see that the occlusion does not displace it before it sets. If you doubt this, just freshen the surfaces of two old fillings and, after allowing it to set, try and break the joint.—*Dr. W. A. Robertson, Review.*

IMPACTED THIRD MOLARS.

Paint the inflamed tissues with the following combination:

Rx. Zinc iodid.....dr. iii
Distilled water.....oz. i
Tinct. iodin.....dr. v
Glycerin to make.....oz. iv

—*Prinz, Dental Digest.*

TO CLEAN WAX.

After melting and straining boil the wax for 20 minutes in a solution composed of half-ounce oxalic acid to each quart of water. Old wax may be made cleaner than new. Two drops of oil of cassia added to each pound keeps wax aseptic and renders it less unpleasant to the patient.—*Thomas Fletcher, Pacific Dental Gazette.*

CARBOLIC ACID ANTIDOTE.

In a communication to the *Lancet* Dr. John Maberly draws attention to the efficacy of iodin as an antidote in carbolic poisoning. The first hint as to the antidotal value of iodin was conveyed by the practice of a Middlesex Hospital surgeon of rinsing his hands—numbed with carbolic solution—with iodin water. The effect was almost immediate, the iodin removing the numbed feeling as well as the bleached, crinkled condition of the skin. Since then Mr. Maberly has tried its effect internally in one case where carbolic acid was taken, and in two other cases where Jeyes' fluid (a disinfectant) had been accidentally swallowed. The effect in all cases has been excellent and prompt.—*Cosmos.*

EVANS' BEQUEST.

At a mass meeting of dentists, under the auspices of the Pennsylvania Association of Dental Surgeons, at No. 1722 Arch street, to which the entire profession of the city had been invited, resolutions were adopted to be sent to the trustees of the Thomas W. Evans fund, favoring the establishment of a post-graduate dental institute, which should be entirely independent of any existing dental college or institution. Dr. George F. Root presided and Dr. William H. Trueman presented the resolutions, which set forth that, whereas the plain intention of Dr. Evans' will was to create an independent institution, which should carry on its work in a way adapted to bring the largest benefit to his beloved profession, it was resolved to request the trustees of the Evans' fund to establish a museum and post-graduate courses of instruction and also laboratories which should not be affiliated with any other college or institution.

A commitee of nine was selected to confer with the trustees of the Evans fund in reference to the proposed institute, and some of the dentists advocated the creation of a special fund for the purpose among their own number, in case the Evans fund did not become operative.

PERSONAL AND GENERAL

Benz-Born.—Dr. Norman T. Benz and Miss Eva M. Born, both of Syracuse, N. Y., were married June 4.

Jenkins-Deakins.—Dr. Harry L. Jenkins and Miss Lillian Deakins of Jasper, Tenn., were married June 10.

Fire.—Dr. K. D. Park's dental office at Painesville, Ohio, was destroyed by fire June 6, with a loss of $500.

Forms Partnership.—Drs. Nailbert and Vane, two young dentists at Cedar Rapids, Iowa, have formed partnership.

Gill-Dunham.—Dr. Walter W. Gill of Westfield, N. J., and Miss Mary Claire Dunham of Alloway, were married June 15.

Wilcox-Johnson.—Dr. D. E. Wilcox of Oconto, Wis., and Miss Anna Johnson of Crown Point, Ind., were married May 14.

Mounce-Chamberlain.—Dr. W. L. Mounce and Mrs. M. D. Chamberlain, both of Moss Point, Miss., were married June 4.

Arnold-Sutlive.—Dr. Frederick J. Arnold of Wayland, Mo., and Miss Birdie Adelia Sutlive of Keokuk, Iowa, were married June 15.

Sinotte-Sutlive.—Dr. Ralph Gaylor Sinotte of Canton, Mo., and Miss Grace Paralee Sutlive of Keokuk, Iowa, were married June 15.

Fire.—A fire at Ennis, Texas, destroyed the block in which was located the office of Dr. J. P. Clark, a dentist, with considerable loss.

Carlton-Winstead.—Dr. DeLaney Carlton of Salisbury, N. C., and Miss May Winstead of Rocky Mount, N. C., were married June 10.

Carlton-Winstead.—Dr. John DeLaur Carlton of Salisbury, N. C., and Miss Meta May Winstead of Rocky Mount, N. C., were married June 9.

Dr. W. H. Fisher, a dentist at Shelbyville, Tenn., committed suicide May 31 by shooting himself. Ill health is presumed to have been the cause of his rash act.

Marine Dentist.—Dr. B. B. Marco has established an office for the practice of dentistry in the new Italian steamship Principe di Udine, of the Lloyd Sabaudo service.

Four Women Graduate.—The Ohio College of Dental Surgery has graduated four women dentists. They are Ethel E. Spencer, Chattie M. Hillebrand, Emma Beddow and Edith Neufarth.

Dr. Crawford Recovered.—Dr. A. B. Crawford, a dentist, who has been confined at the Grand Rapids, Mich., hospital on account of illness has recovered and resumed his practice at Edgar, Wis.

Dentists Have Outing.—The dentists of Elgin, Aurora and other Kane County members of the association enjoyed an outing June 17. Baseball and other amusements were the order of the day.

Dentist Wins Trade Mark Contest.—Dr. F. A. Green, a dentist at Geneva, Ohio, was the successful contestant for a prize of $25 in selecting the best trade mark for the Cleveland, Painesville & Eastern Railroad.

Dies in Dental Chair.—Mrs. Denis Duval, 24 years of age, died in a dental chair in Montreal, Canada. She had been given chloroform and had partially recovered after the extraction, but expired a few minutes later.

New Dean at Creighton.—Dr. A. H. Hipple has been appointed dean of the dental department of the Creighton University, vice Rev. W. P. Whelan. Dr. Hipple is a graduate of the Royal College of Dental Surgeons at Toronto, in the class of 1889.

Dentist His Own Surgeon.—Dr. H. E. Hall, a dentist at Collville, Mass., while working on his homestead twenty miles from the city, nearly severed two of his toes with an ax. There being no surgeon within twenty miles he stitched back the toes to their place himself and is recovering.

Resigned from Ann Arbor School.—Dr. H. M. Reid, who for twenty years was a member of the Michigan State University Dental Faculty, has resigned. Dr. Reid is 72 years of age and will retire to the farm of his son, Hal Reid, the well-known playwright, near Long Branch, N. J.

State Board News.—A dentist in Los Angeles was fined $50 for illegal practice. Fines aggregating $600 are being rescinded by dentists in California, secretary Herrick of the State Board of Examiners states that the $2 tax was imposed on dentists for the purpose of creating a fund with which to prosecute illegal practitioners was misunderstood. This action had now been rescinded until the purpose of the association is generally understood.—A dentist in Washington, Ill., was fined $50 and costs for illegal practice.—Dr. R. D. Brabson has been reappointed by the State Board of Tennessee.—A dentist in Valentine, Neb., was arrested for illegal practice.

Robberies.—Drs. J. T. Crews, Jackson, Tenn., loss $115; J. A. Arrington, Jackson, Tenn., loss $85; J. D. Wise, Jackson, Tenn., $50; Dr. Newman, Jackson, Tenn., loss $12; R. S. Henry, Chattanooga, Tenn., loss $200; L. C. Burgard, Columbia, Tenn., loss $40; M. P. & W. G. Merrill of Columbia, Tenn., loss $20.

Removals.—Drs. George A. Ryder, from Lawlor, Iowa, to Davenport, Iowa; E. D. Geiger, from Chenoa, Ill., to Canton, Ill.; Julian W. Smith, from Belleville, Ill., to Chester, Ill.; H. B. Strain, from Darlington, Ind., to Wingate, Ind.; C. W. Wilkinson, from Iowa City, to Davenport, Iowa; W. W. Luffburrow from Oliver, Ga., to Harlem, Ga.; L. A. Webster, from Lincoln, Neb., to Grand Island, Neb.

NECROLOGICAL.

Dr. C. C. Whisler, a dentist at Ashland, Neb., was drowned June 15.

Dr. J. E. Davis, a dentist at Columbus, Ohio, died May 31 of paralysis.

Dr. W. F. Stansbury, a dentist of Lenington, Miss., died May 23 of heart failure.

Dr. T. P. Cowan, a dentist at Maryville, Tenn., died June 15. He was 64 years of age.

Dr. A. J. Yeager, a dentist at Joplin, Mo., committed suicide by drinking carbolic acid May 25.

Dr. John W. Gregory, a dentist at Chesterton, W. Va., died May 16. He was 72 years of age.

Dr. Howard N. Lancaster, a dentist at Chicago, Ill., committed suicide May 24 by shooting himself in the temple.

Dr. R. A. Gardner, a dentist at Quincy, Ill., died June 7. He was 36 years of age and graduated from the American College of Dental Surgery in 1888.

Dr. Robert E. Galvin, a dentist at Louisville, Ky., died May 25. He had been a member of the Louisville School Board for twelve years, and was formerly president of the board.

DENTAL PATENTS

Fig. 1.

886,140. Apparatus for Forming Dental Structures—John A. Lentz, Phoenix, Ariz. Filed March 16, 1907. Serial No. 362,657. 1. An apparatus of the class described, comprising two frames pivotally secured together; oppositely disposed mold retaining cups rigidly secured to the opposing faces of each of said frames, and a heat retaining shield secured to the lower frame and surrounding the lower mold retaining cup, and means to heat said lower cup.

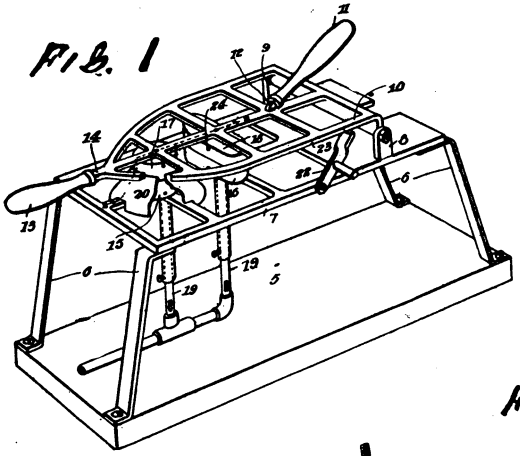
Fig. 2.

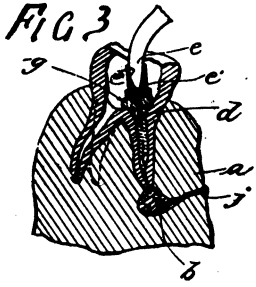
880,899. Dental Articulator—William Luxmore, Chicago, Ill. Filed December 19, 1906. Serial No. 348,638. 1. In a device of the character stated, a supporting stand comprising a pedestal and a base, a tube vertically adjustable in said pedestal, a vertical rod rotatably mounted in said tube, a horizontal rod adjustably mounted in said vertical rod, and articulating jaws secured to said horizontal rod.

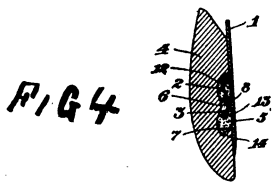
Fig. 3.

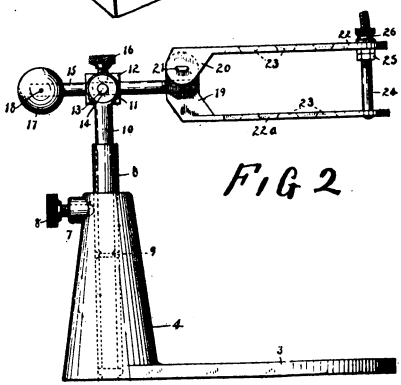
881,469. Attachment for Dental Syringes—Charles W. Hale, Springfield, Mass. Filed June 21, 1906. Serial No. 322,792. In combination with a nozzle end portion of a syringe having a hypodermic needle for-

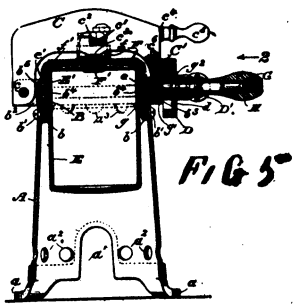
wardly projecting therebeyond, an adapter comprising a cylindrical body having a conical socket flaring towards one end of said body, to conformably receive the said nozzle end portion, said body also having a reduced opening extending to the other end thereof axially from said











socket, said opening surrounding said needle, said body being frictionally and detachably engaged with the said nozzle end portion and having its face to which said reduced opening extends adapted to rest upon a cushioning mat surrounding said needle.

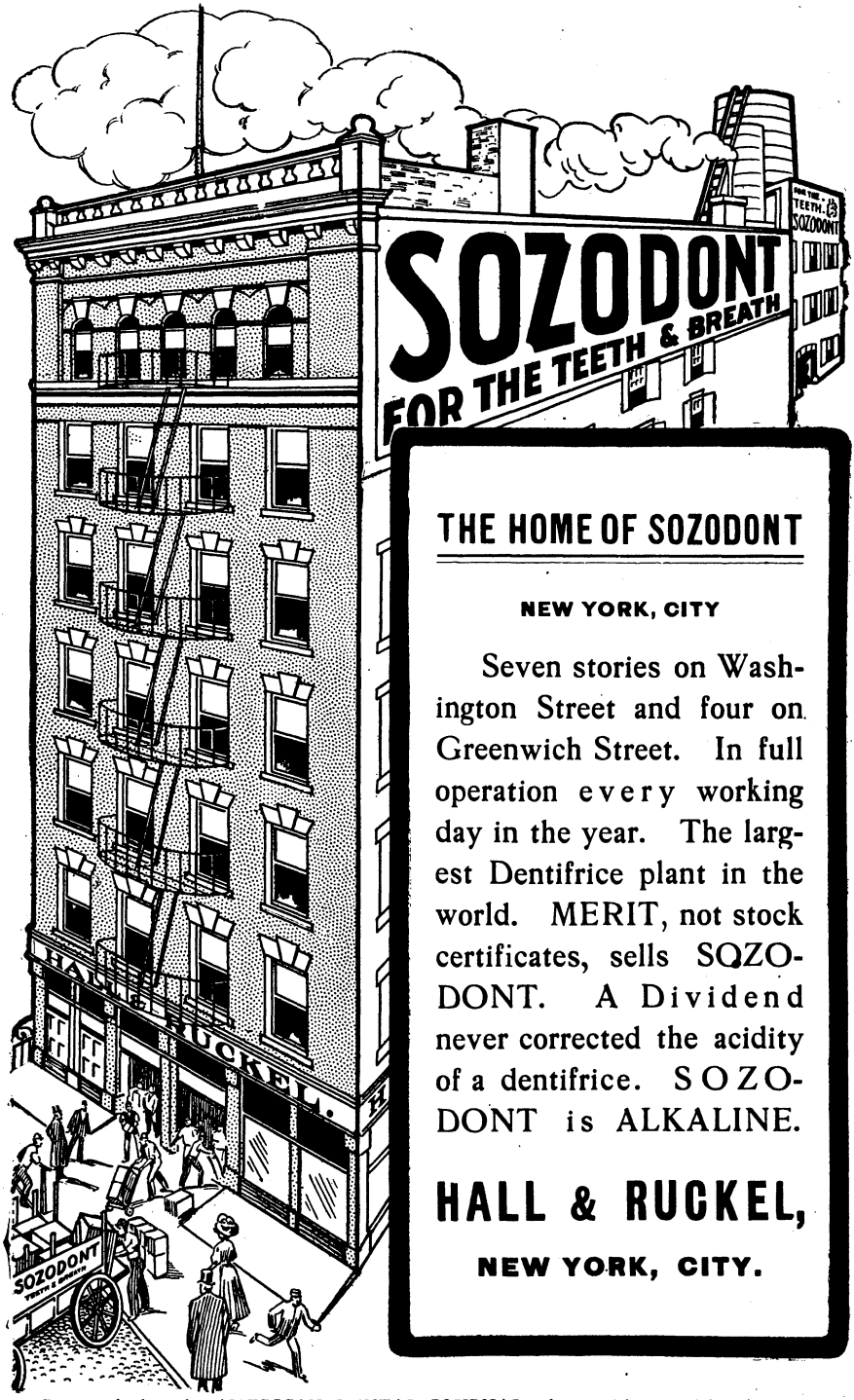
Fig. 4.

885,018. Artificial Tooth—Herman E. S. Chayes, New York, N. Y. Filed March 11, 1907. Serial No. 361,663. 1. In an artificial tooth device, the combination of a backing having a lug adapted to be received into a cavity in a facing and to hook around a pin across the cavity, said facing, and said pin.

Fig. 5.

886,300. Dental Vulcanizer—Frederick W. Korb and William F. Hieber, Cleveland, Ohio, assignors to The United States Dental Manufacturing Company, Cleveland, Ohio, a corporation of Ohio. Filed August 18, 1906. Serial No. 331,150. 1. In a dental vulcanizer, the combination of a casing, a boiler vessel adapted to seat in said casing, a cover adapted to close the boiler vessel, a lever pivoted on the casing and adapted to bear on the boiler cover, a lug projecting from the free end of the lever, a bearing pin projecting from the casing, a cam disk mounted thereon at a right angle to the plane of the lever and having an eccentric groove cut in its inner face adapted to engage the lug on the lever, with a gap from said groove and means for adjusting the lever to compensate for wear of the cam, etc., substantially as set forth.

INDEX TO ADVERTISEMENTS.



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